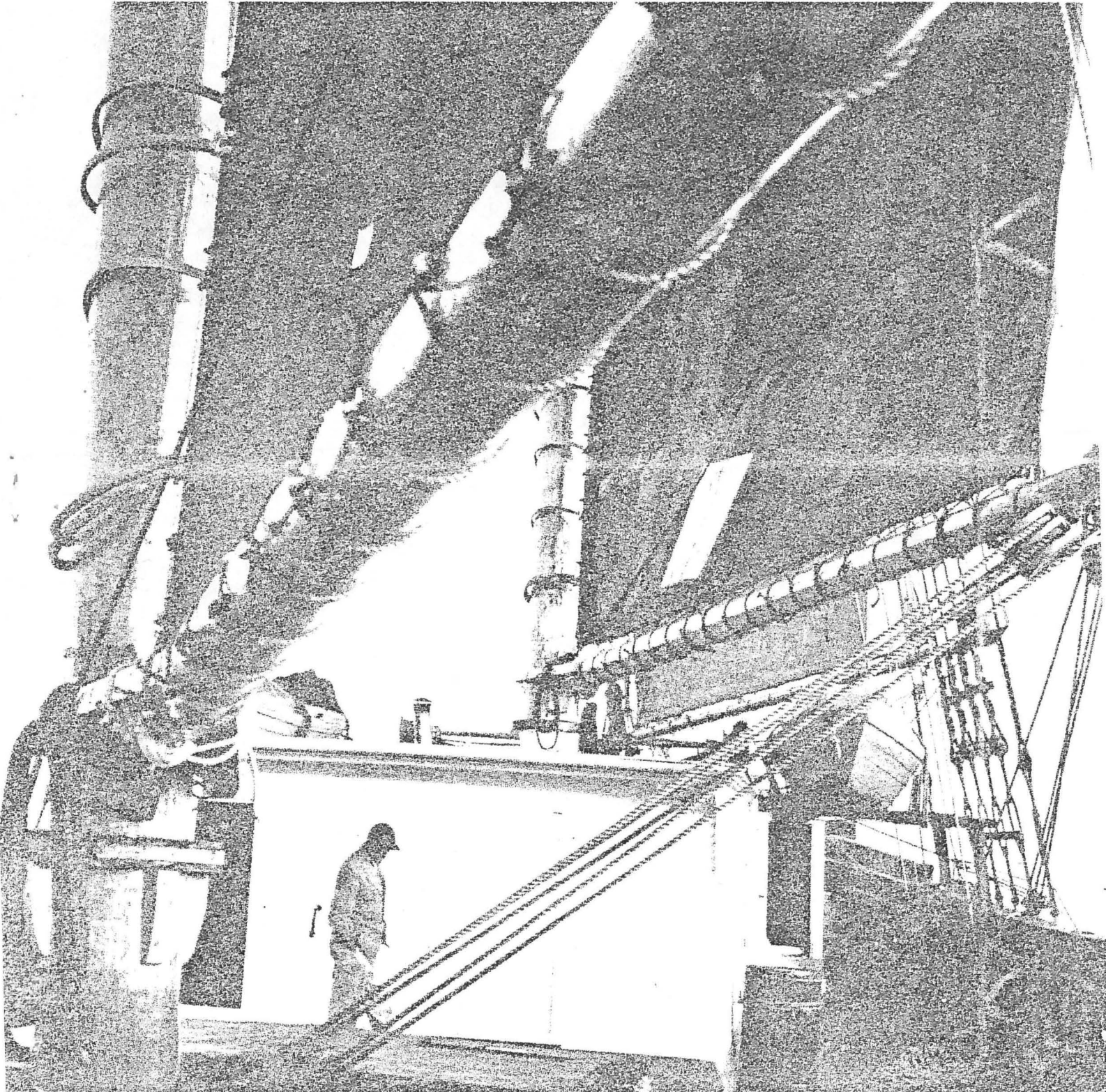


The ENVIRONMENTAL LIVING PROJECT at HYDE STREET PIER



NATIONAL PARK SERVICE
GOLDEN GATE NRA
Revised January, 1978



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HYDE STREET PIER

The Environmental Living Project
San Francisco Historic Ships
Revised, 1978

Golden Gate National Recreation Area

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THE ENVIRONMENTAL LIVING EXPERIENCE

Introduction

"Environmental living, as the name implies, is an actual living, overnight experience for children that takes place at any cultural, historic, or prehistoric site where the interaction and interdependency of man and his environment are presented. It relies heavily on pre-site explorations and preparation, role-playing and problem solving, and 'cross-age' teaching — the enlistment of high school (and college) youth counselors and group leaders."*

This environmental living experience takes place aboard the *C.A. Thayer*, a 156-foot schooner that was built in 1895 to carry lumber and later used for cod fishing. It is primarily a role-playing experience through which an historic era of ships and the sea is explored. The children will experience as nearly as possible the life of the sailors aboard the *C.A. Thayer*. By confronting and solving everyday problems of living, they will be made aware of the differences *and* the similarities of the two environments — the seamen's and their own. Through this experience, it is hoped that the children will become curious about the physical, and historical aspects of the *C.A. Thayer* in its natural environment, as well as aware of *their* relationship to this ship and its place in history. Ultimately the students may discover and understand a little better their relationship to their own environment.

Reservations

To make reservations for your class, write to:

ENVIRONMENTAL LIVING
San Francisco Maritime State Historic Park
2905 Hyde Street
San Francisco, California 94109

Your letter should tell us the name and address of your school, the number of students involved, the ages or grade level of your students, and the name, mailing address, and telephone number of the teacher in charge.

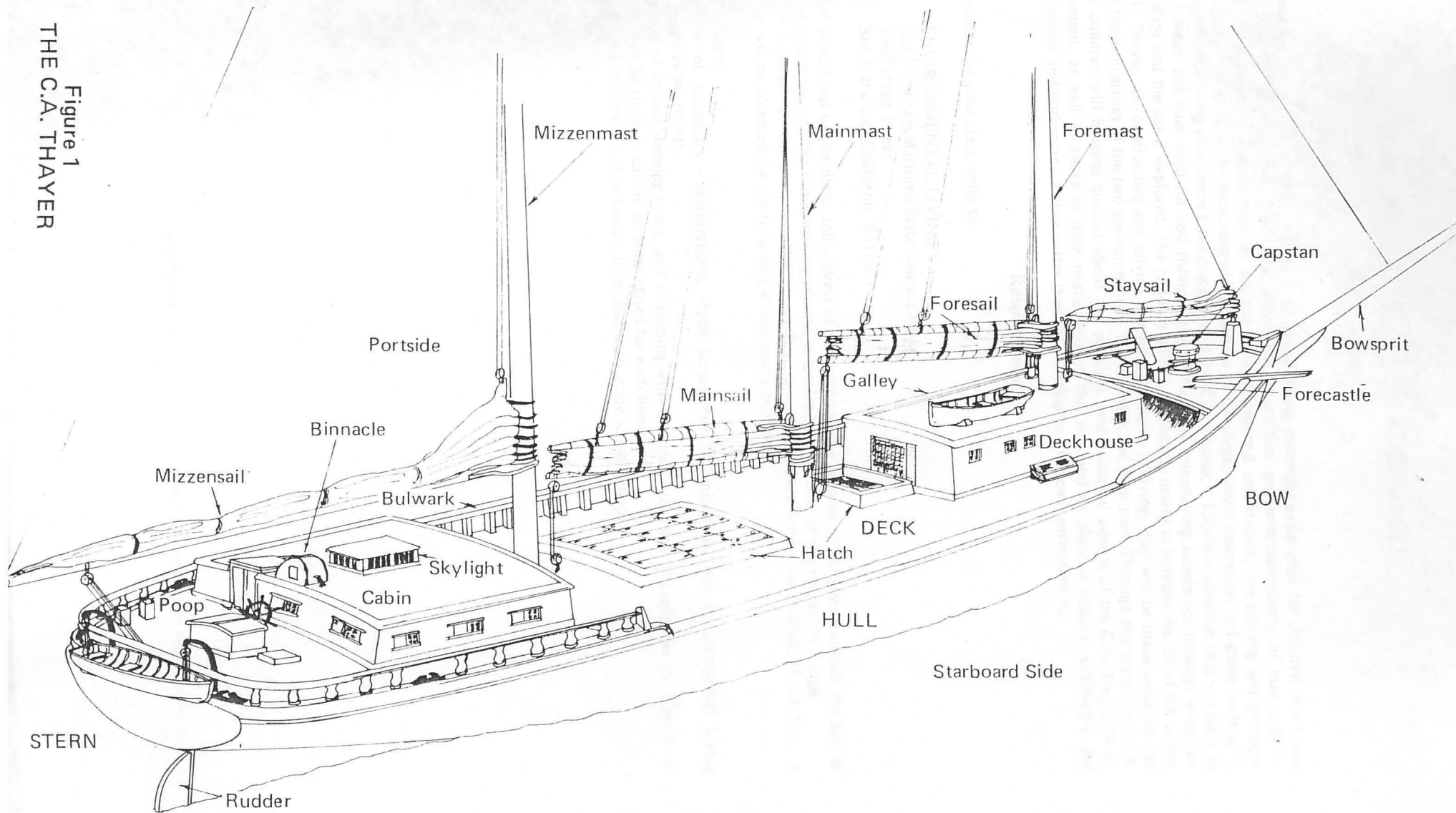
Reservation requests are accepted on a first come-first serve basis. Only letters postmarked March first, or later, of each year will be accepted for the following school year's program.

A few reminders:

1. Because of budgetary considerations, Hyde Street Pier is limited to four Environmental Living experiences per month.
2. Because of limited sleeping space, and in keeping with the size of the crew of a ship like the *Thayer*, no more than 30 students can be accommodated for each live-in.
3. Participation is restricted to fourth, fifth, and sixth grade school groups.

*The National Park Service. *The Environmental Living Project* — Fort Point National Historic Monument, San Francisco, 1973.

Figure 1
THE C.A. THAYER



THE PROGRAM

This environmental living program is divided into five stages: (1) The Teacher/Leader Workshop; (2) The Introductory Visit; (3) The Planning of the Experience; (4) The Environmental Living Experience; and (5) The Follow-up. In order to make this a successful and exciting adventure in learning, it is essential that you and your class participate enthusiastically in each stage.

Stage 1 – The Teacher/Leader Workshop

The teacher/leader workshop establishes awareness of and familiarity with the area. It is mandatory that all teachers planning an environmental living project for their students attend one of these workshops.

During the workshop, teachers and leaders discuss and explore an exercise in observation known as the Strands Walk. In addition, they spend a night aboard the *Thayer*, during which they play the roles of sailors and carry out typical tasks of seamen. In this way the teachers and leaders become familiar with the situations and experiences in which the students will later be involved.

Stage 2 – Introductory Visit

The introductory visit, or survey trip, is based on the Strands Walk. At Hyde Street Pier this consists of a non-conducted walk through the park, followed (back in the classroom) by a discussion of what was seen, heard, discovered, felt, enjoyed, etc. In addition, interrelationships can be discussed, such as the reason for building the ships, how they were constructed, how they ran, who sailed them, what weather conditions and natural phenomena had to be contended with, and many others. The idea is to allow the group to become familiar with the historic waterfront environment where they will be living and to whet their interests and curiosities concerning this environment.

At the conclusion of this visit, the class will be given a "Sea Chest" in which they will find materials essential to preparing them for their live-in aboard the *C.A. Thayer*. This chest will include:

1. Reference material on the ships and a bibliography of resources for additional information.
2. A copy of this booklet which contains crew task assignments and explanations of bell time and standing watch.
3. Sample materials for practicing skills necessary in carrying out tasks.

It is recommended that you plan to make this introductory visit two to four weeks before the date of your live-in experience. This will ensure ample time for the researching and preparation essential for a successful overnight.

You may schedule your class' introductory visit for any time of the day from 8:00 – 4:00. However, we do suggest that you allow a full two hours to explore and discuss the ships. If you come by bus, we suggest you let the children off at the entrance to the park and direct the bus driver eastward along Jefferson Street to the vicinity of the *Balclutha* where there is a parking area for buses.

Upon your arrival at the park, you will be greeted by a member of the park staff who will assist you and your aides in starting your class on their walk, which, though supervised, is non-conducted. We require a minimum of one adult for every five children.

After the students have explored the pier and ships, they will meet with a member of the park staff in order to talk about what they have experienced and have any questions answered.

Stage 3 – Planning the Experience

Between the students' first visit and their overnight stay at the ships, many plans must be made. This preparation time is important. A thorough understanding by the children of skills such as watch-standing or handling tackle and their *active* participation in making plans will greatly enhance their experience.

- o You will need to explore with your students what equipment and clothing will be needed for their overnight visit.
- o Some simple safety rules will have to be laid down. Have your students define their own rules and compare their list with the one on p. 5 to see if anything was overlooked.
- o A menu must be prepared and groceries purchased.
- o You may wish to use the results of your Strands Walk as a basis for study projects.

Your students may form themselves into these five crews — a galley crew, a fishing crew, a sailmaker's crew, longshoremen, and a linehandling crew; or you may find it necessary to redefine the roles based on developments arising from the Strands Walk. If you do the latter, please contact the ranger in charge of your overnight so that you and the ranger can work together with the class. Either way, each crew should select its leader. The crew leader will be responsible for his or her crew and for seeing that his or her crew fulfills its tasks.

Included in this booklet are descriptions of some of the technology of the sea. You may wish to use this material in order to prepare your students for their overnight visit. It is *not* expected that your students will become proficient in all of these subjects. Rather, the technology is provided to aid the teacher in relating the Environmental Living Program to other courses normally taught.

Stage 4 — The Environmental Living Experience

Students, teachers, and leaders sign aboard the *C.A. Thayer* and "cast off" for a voyage into the past. Crews begin to carry out their tasks and other planned activities.

Schedule for Environmental Living

1500 — 1600	Check in at Tubbs Building on the Hyde Street Pier. 1. All overnight gear stored in Tubbs Building until park closes. 2. Roles defined, crews assigned tasks.
1600 — 1630	Meet on <i>Thayer's</i> main deck.
1630 — 1800	Crews carry out first assignments.
1800 — 1830	Wind-up Period — Meet on main deck of <i>C.A. Thayer</i> for discussion of tasks.
1830 — 1900	Bring all overnight gear aboard <i>C.A. Thayer</i> and establish bunking area in crew's fo'c'sle.
1900 — 2000	Dinner.
2000 — 2200	Dogwatch. Time to relax, sing a few shanties, tell sea stories, and discuss things.
2200	Lights out. Set the watch.
0430	Galley Crew starts preparing breakfast.
0600	Reveille.
0600 — 0615	Coffee and snack served from galley.
0615 — 0700	Morning cleaning activities begin. Remove bedding and such from the ship.
0700 — 0730	Breakfast.
0730 — 0830	Final clean-up by crews.
0830	De-briefing. Depart Hyde Street Pier prior to 1000.

Clothing and Equipment

In order to make the "living experience" as authentic as possible, we highly recommend that you and your students dress, as much as possible, in the style of the sailors that sailed aboard the *C.A. Thayer*. Some suggested items would be watch caps, pea coats, dungarees (or Frisco jeans), sturdy non-slip shoes, turtleneck sweaters, etc. Most importantly, warm clothing is a must, for cold weather and brisk winds are typical conditions aboard the *Thayer*.

Should rain be forecast, please make sure that the children bring adequate protection, for most activities require working on deck.

Sleeping quarters are the bunks in the forecastle of the ship where the cod fishermen once slept. Straw mattresses are provided by the park. Each child and adult should bring a sleeping bag as well as a plate, cup, and utensils for eating. Restrooms are on the ferryboat, *Eureka*. We suggest that only adults bring flashlights.

Safety

The rules and regulations aboard any ship are always strictly observed. This discipline should be part of your class' "living experience" since it is an authentic part of a sailor's life. If, in class during the planning period, the students set up the guidelines which they themselves will later follow on board the *Thayer*, it will probably make the experience more meaningful.

There are a few important safety rules set up by the state park which must be followed by all classes during their visits to the ships. These are:

1. No one is to climb on any part of the rigging of the ship.
2. Boats which are hanging over the side of the ship or pier are never to be boarded until after they have been lowered to the water.
3. Once the class has signed onto the *Thayer*, it has "cast off" for the remainder of the "living experience." Therefore, except for the use of the restrooms and activities necessary for some tasks, the participants should have no reason for leaving the ship at any time. During the night watches, a log will be kept for signing children on and off to use the restrooms on the ferryboat.

Stage 5 — The Follow-up

The last phase of the program, the follow-up, takes place in your classroom from several days to several weeks after the overnight visit. The content and structure of this stage is dependent upon the individual teacher's goals. Some may have the students evaluate the experience as a writing assignment; some may plan to share their experiences with other classes through oral reports or dramatic presentations; others may take the opportunity to capitalize on newfound interests among individual students. However this phase is handled, we ask that you share it with us so that we can better evaluate our own role in the project.

Program Costs

The cost of Environmental Living to the schools is minimal — only the cost of transportation to and from Hyde Street Pier and feeding the class during their stay.

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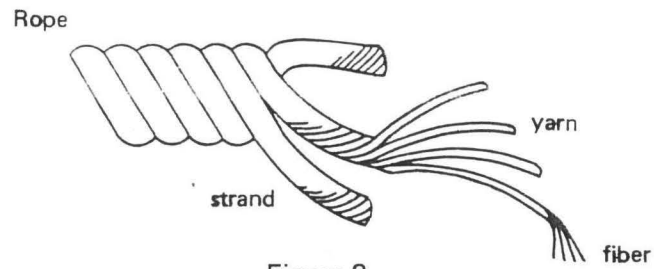


Figure 2
ROPE

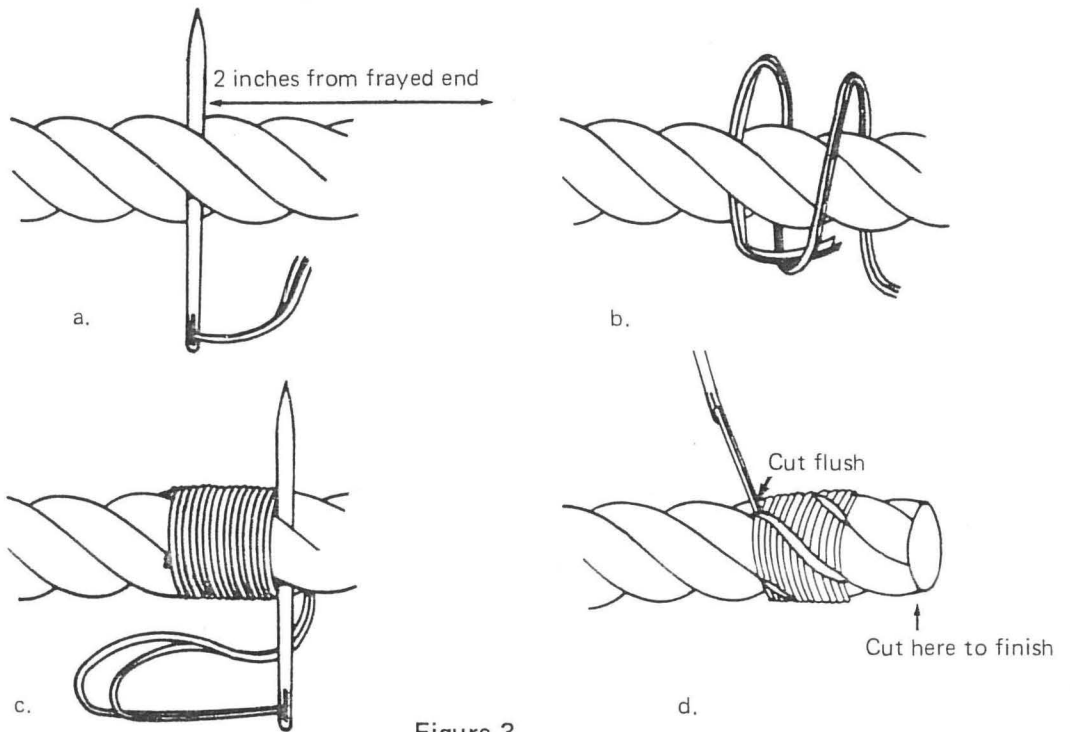
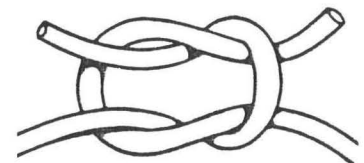


Figure 3
NEEDLE WHIPPING

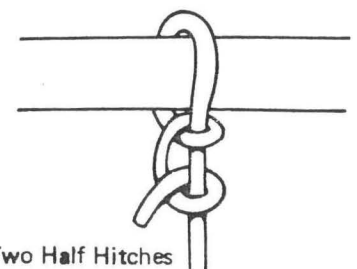


Bowline

Figure 4
SIMPLE KNOTS



Square Knot



Two Half Hitches

SOME BASIC SEAMANSHIP SKILLS

Rope

Anyone who has been aboard a sailing ship must realize the many important roles that rope plays on the vessel. On the *C.A. Thayer*, sailors needed rope for mooring lines, sail rigging, block and tackle operations, anchors, etc. Manila rope, made of the abaca plant from the Philippines, was the type commonly used aboard the *C.A. Thayer*. Nowadays, most yachtsmen find synthetic rope lighter and more durable than natural fiber ropes.

The construction of manila rope is very simple. Take a strand and examine it. If you untwist the rope in the middle slightly, you will see that the rope is made up of three strands. Note that the rope springs back to its original form. This is because the "yarns" which make up each of the three strands are spiraled to the left, while the three large strands spiral to the right. Therefore, while you are untwisting the strands, you are twisting the yarns more tightly. This is the reason rope holds together and is also an important factor in the strength of the rope. You will notice that the yarns are made up of fibers which lie in the same direction (right) as the three large strands.

There are many more things to learn about rope (care of, types, etc.), but the above information should provide the beginner with a basic understanding and appreciation of the construction and importance of rope.

Needle Whipping

Rope is too important to the sailor to allow it to unravel and thus become useless. An unravelled rope end is an unsightly abomination to the seaman's eye and is referred to derogatorily as a "cow's tail." Needle whipping is the most permanent, efficient method of securing the strands and keeping the line from unlaying (unravelling).

First you must select a sail needle and thread it with a fathom-length (6') of twine. The ends of the twine should be brought together so that the whipping will be made with the twine doubled.

The whipping will start inboard and work towards the end of the line. All turns will be made against the lay of the line.

1. Start your work about two inches from the frayed end. Pass the needle under one strand of the line. Pull all the twine through except the last half inch. Then wrap the doubled twine around the line, making certain to trap the short end under the wraps. (See Fig. 3, a and b.)
2. Enough turns are wrapped about the line so that the length of the whipping will equal the diameter of the line. Then pass the needle under one strand and pull it up to tighten the twine (Fig. 3c). Lay the twine over the wraps so that it follows the contine (the space between the strands) and then pass it beneath a strand at the inboard end of the wrapping. This process is continued until the three contines are covered with twine (Fig. 3d).
3. Finish the whipping by passing the needle and twine through the center of a strand. Pull it tight and cut the twine flush with the surface of the strand. The last step is to cut the line off about a half inch from the whipping (Fig. 3d).

Simple Knots

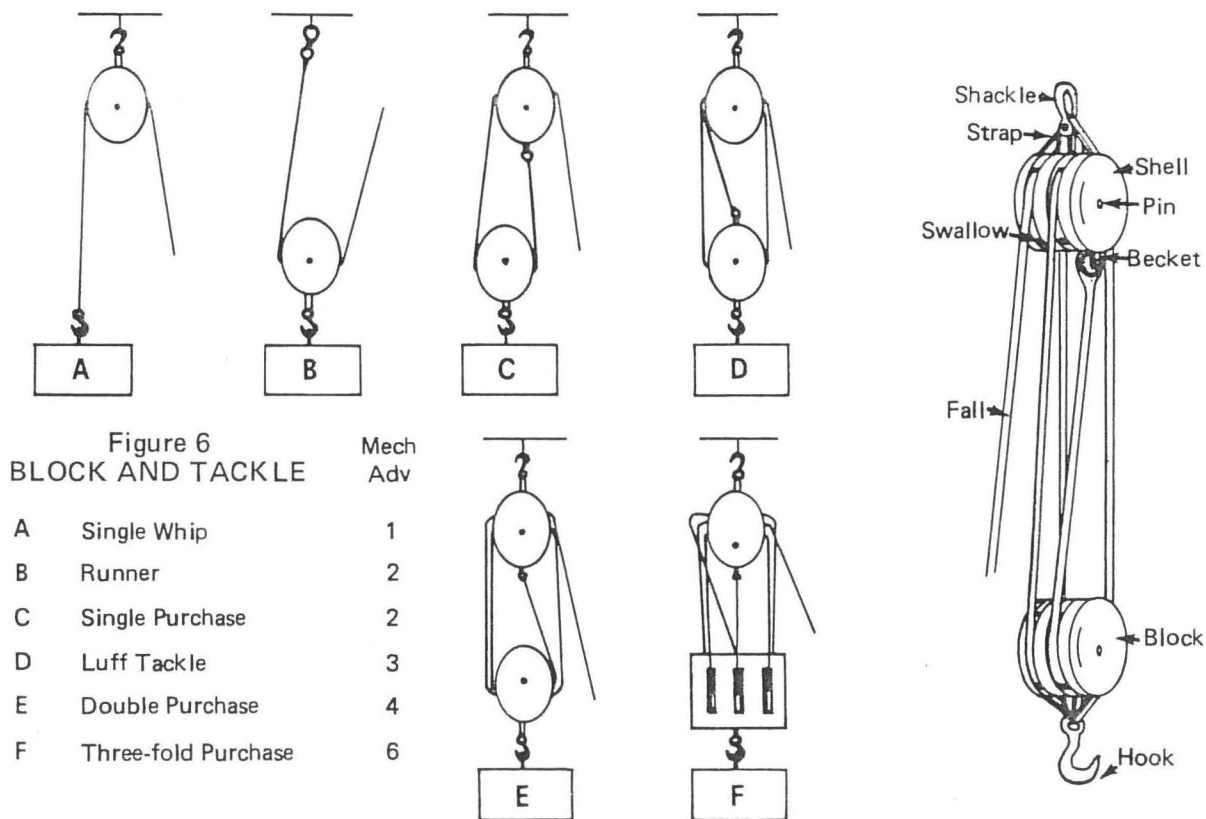
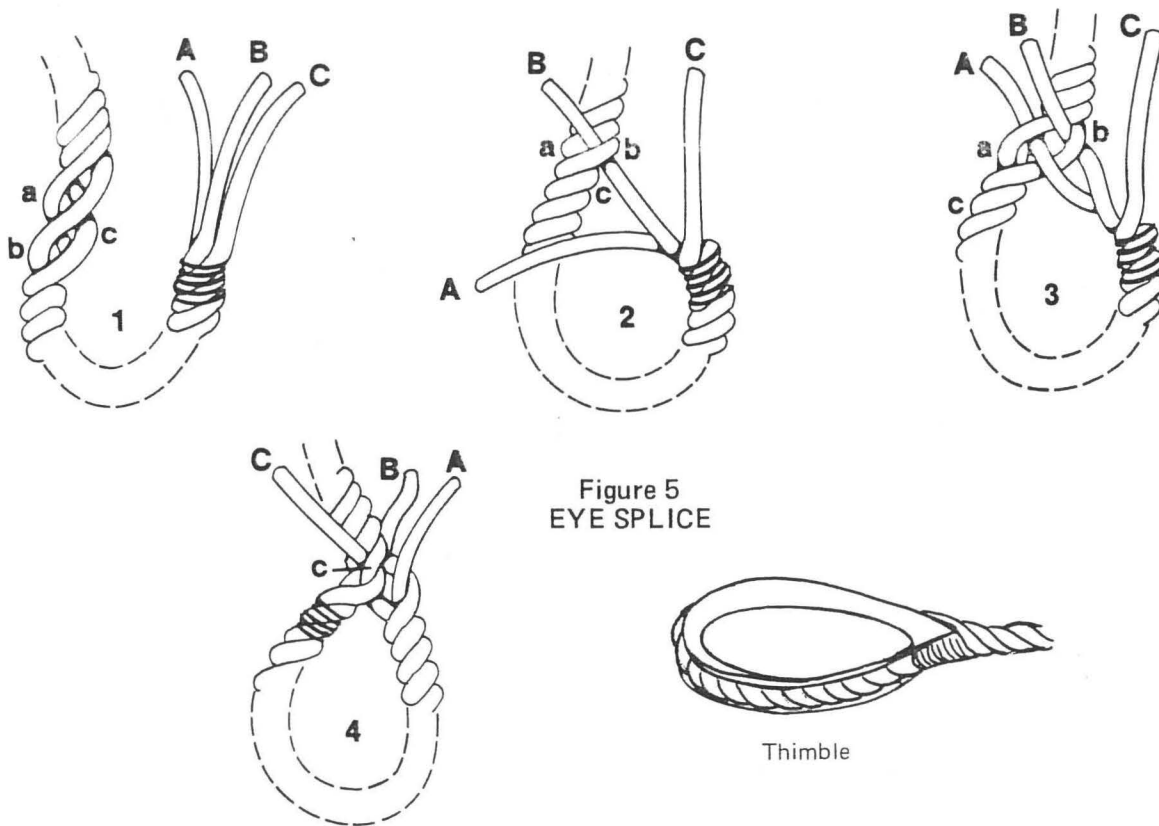
Bowline

The bowline is probably the most useful knot for the sailor. It is a method of forming a temporary loop in the end of a rope. If tied properly (as shown in the diagram), this knot will never slip, yet will always untie easily even when it has been under heavy strain.

The bowline is used in many ways. For example, if you did not want your small boat to drift away from the pier, you could tie the boat's painter (rope attached to the bow of the boat) to the ladder or post of the pier using a bowline. Try this on the leg of your chair in school.

Square Knot

The square knot is also very useful aboard a ship. It will not slip; and, like the bowline, will untie easily. The most common use for the square knot is to tie the ends of two ropes together. It is made by tying a simple overhand knot, placing the strand in your right hand over the one in your left hand. (An overhand knot is the one you make before tying a bow with your shoe laces.) Next, tie another overhand knot, placing the strand now in your left hand over the one in your right hand. Remember the phrase, "right over left, left over right." The resulting knot should look like the one in the diagram on page 6.



NOTE: The single whip arrangement (Fig. 6, A) consists of a single, fixed block. It has a mechanical advantage of 1. This means that there is no increase of power; it is used simply to change the direction of effort — it is easier for a man to pull down than it is for him to lift a weight up.

Two Half Hitches

Two half hitches are used when tying a rope to almost anything, especially in cases where the rope will be kept taut. It is very simple to tie and, in general, is quite secure. The diagram of the knot should make the method of tying it clear.

Eye Splice

Splicing is the art of joining rope by intertwining the ends of strands. The simplest and most used splice is the eye splice. The eye splice is made by turning the end of a line back on itself, so as to form a loop, and then weaving the end strands into the body of the line. If you follow the diagrams, the eye splice should be easily formed.

The key to a successful splice is in the "marriage" of the first tuck.

1. Unlay the strands for about 6" (on a $\frac{1}{2}$ " line) from the end. We shall refer to the strands, from the left, as A, B, and C. Also, untwist the body of the line where the two parts are to join; this time we shall refer to the strands as a, b, and c.

Before proceeding with the splice, needle whip the rope (see p. 6) 6 inches inboard to keep the strands from unlaying further.

2. Now pass strand B (the center and top strand) under strand b. Always start by tucking the center strand first.
3. Next, pass the left-hand strand, A, over strand b and under strand a. (Strand A goes into the groove that strand B came out of.)
4. Now turn the whole splice over and tuck strand C under strand c. Be careful with this one! Strand C will have to enter the groove where A came out and pass to your left coming out of the groove where B went in. The first tuck is now completed in all strands.

Now work around the splice, putting a second tuck in each strand (inboard from the first tuck). Then, go around for a third tuck in each strand.

The finished splice should be evenly formed all around the line, and the strands should be cut off about $\frac{1}{2}$ " from the body of the splice. A properly executed splice is not only handsome; but it will also be as strong as the original line.

Thimble: If another line is to pass through the loop of the eye splice, it is common to insert a "thimble." A thimble (see Fig. 5) is a ring of thin metal (or plastic) with a grooved outer edge that fits in an eye splice and protects the rope of the splice from chafing.

Block and Tackle

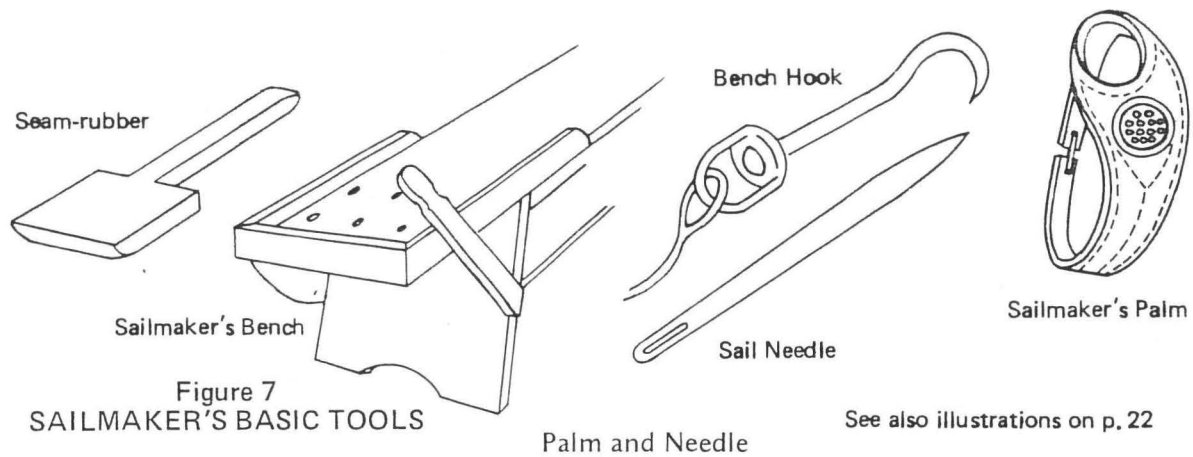
Many of the tasks that you, as sailors aboard the *C.A. Thayer*, are required to do will call for the use of block and tackle (pronounced "taykle" by seamen), an assemblage of lines and pulleys (blocks) so arranged as to make work easier to accomplish. As you look at the rigging of ships, you will see this equipment used for a variety of purposes. Block and tackle is not only a must for such jobs as loading cargo and supplies, lowering and recovering fishing dories, and hoisting the bosun's chair up the mast, but essential for raising and lowering the sails.

There was a time when, instead of pulleys, blocks of wood with holes in them served the mariner. The last examples of these primitive blocks (pulleys) are deadeyes. You may see deadeyes in the *C.A. Thayer's* standing rigging.

A tackle must have at least two parts — a *block* and a *fall*. A modern block (called a pulley by landlubbers) is a wooden or metal case enclosing one or more grooved wheels called 'sheaves'. The fall is a line that is rove (threaded) through the blocks.

The purpose of a tackle is generally to gain an increase of power. This increase in power is called the mechanical advantage; it depends on the number of sheaves (wheels) used in the tackle and their arrangements. If more than one block is used, one block is always moveable, while the other is always fixed. The load, of course, is always attached to the moveable block. The mechanical advantage depends on the number of parts of the fall that are supporting the moveable block. For example, if there are four parts of rope entering the moveable block, the mechanical advantage is 4:1 — i.e., a pull of 100 pounds will move a weight of 400 pounds.

Figure 6 shows several different tackle arrangements. Can you identify the fixed blocks? the moveable blocks? the fall? Try diagramming a block and tackle system that has a mechanical advantage of 5.



It has been said that the wooden sailing ship was the most ecologically sound transportation mechanism ever designed, for it used no fossil fuel and left no residue. The sailing ship used a natural energy source — the wind — which was harnessed by the ship's sails. *C.A. Thayer's* sailmaker was a very important member of the crew. He mended and, occasionally, made sails. It was also the sailmaker's job to make useful canvas items such as buckets, boat covers, and ditty bags.

The basic tools of the sailmaker are the palm and needle. The sail needle varies in size. It has a large eye in order to receive its sail twine. The main body of the needle is triangular in cross section.

The palm is leather, fits around the hand, and is used much as a thimble is used. When sewing, the sailmaker grasps the needle, near its point, between the first finger and thumb while keeping the eye of the needle seated in the metal seat of the palm. The point is pushed through the canvas by using the whole forearm to push the needle, while the fingers guide the needle.

Canvas is always sewn from right to left with the canvas laid across the lap. The sailmaker worked at a specially constructed bench with a post at one end. A bench hook was set into the work and its lanyard was secured to the post of the bench. Thus, the canvas could be pulled taut, against the restraint of the bench hook, and be kept from puckering.

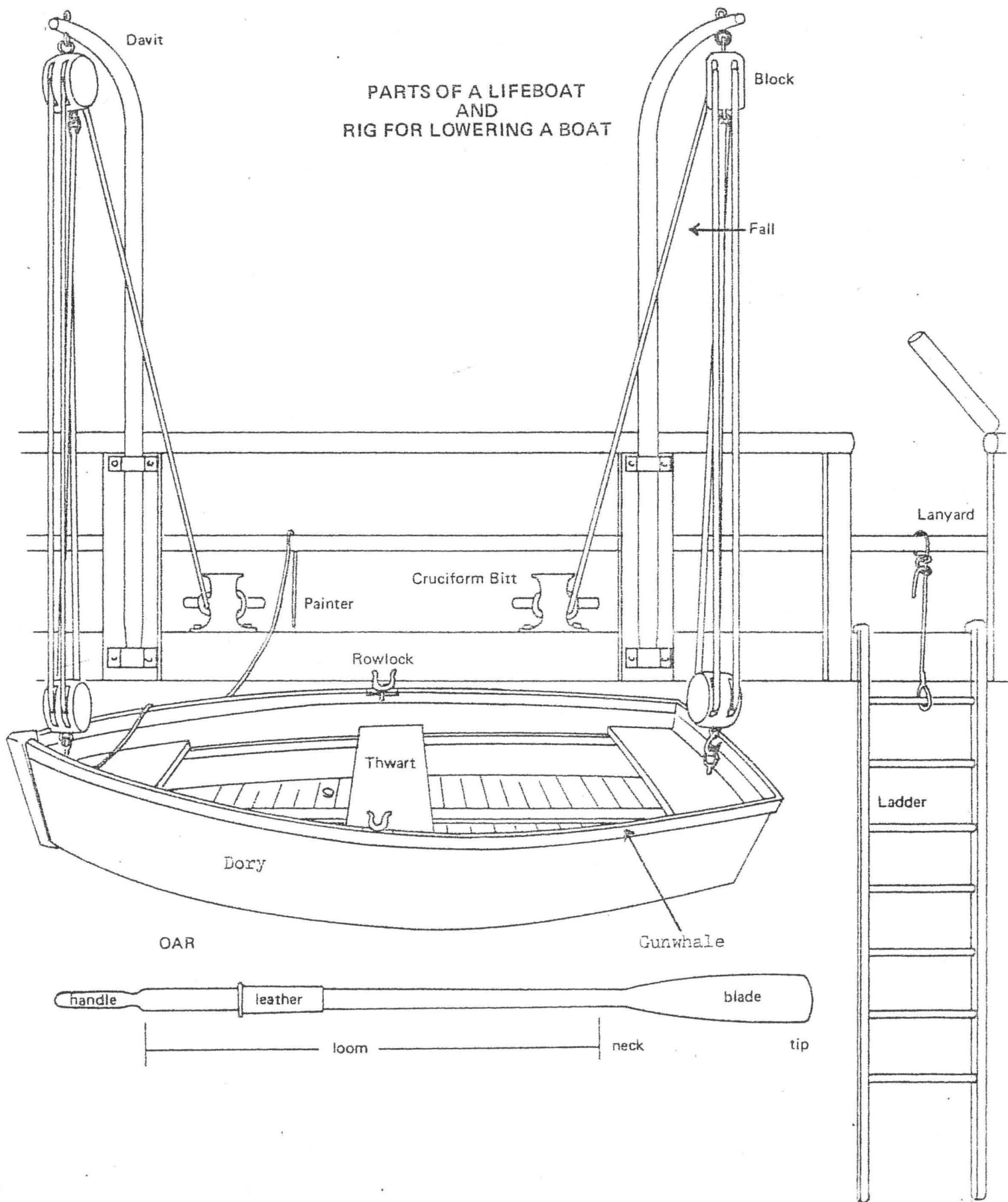
Lowering a Boat

The fishing crew, weather permitting, will lower and recover a boat. The boat crew should consist of three persons who shall wear life jackets whenever they are on the ladder or in the boat.

The steps to be used are as follows:

1. Secure the boat plug. The boat is always hung from the davits with the plug open so that rainwater will drain freely from the boat. If the plug is not closed before the boat is lowered, the boat will fill with water.
2. Rig ladder. There is a long wooden ladder hung on the pier railing near the boat. This ladder is to be hung from the pier where the rail opens near the boat. Make certain the lanyard is secured to the lower railing before lowering ladder.
3. Place oars firmly in boat with the ends of the blades under the stern thwart.
4. Secure bow painter to the pier rail near the bow of the boat, and the stern painter near the ladder.
5. Assign two or more persons to each boat fall. Remove all but one turn of line from each cruciform bitt and lower boat evenly into water.
6. The boat crew shall go down the ladder — one at a time — and board the boat. ALWAYS STAND ON THE THWARFS OR IN THE BOTTOM OF THE BOAT — NOT THE GUNWHALE (UPPER EDGE).
7. One crew member should release the falls from the boat by removing the hooks from the rings in the boat.
8. The other crew member takes the oars, places them in the rowlocks, and prepares to row the boat.
9. Someone on the pier must untie the painter and toss it to the boat crew.
10. To recover the boat, reverse the process.

PARTS OF A LIFEBOAT
AND
RIG FOR LOWERING A BOAT



ENVIRONMENTAL LIVING PROGRAM
National Maritime Museum, Hyde Street Pier

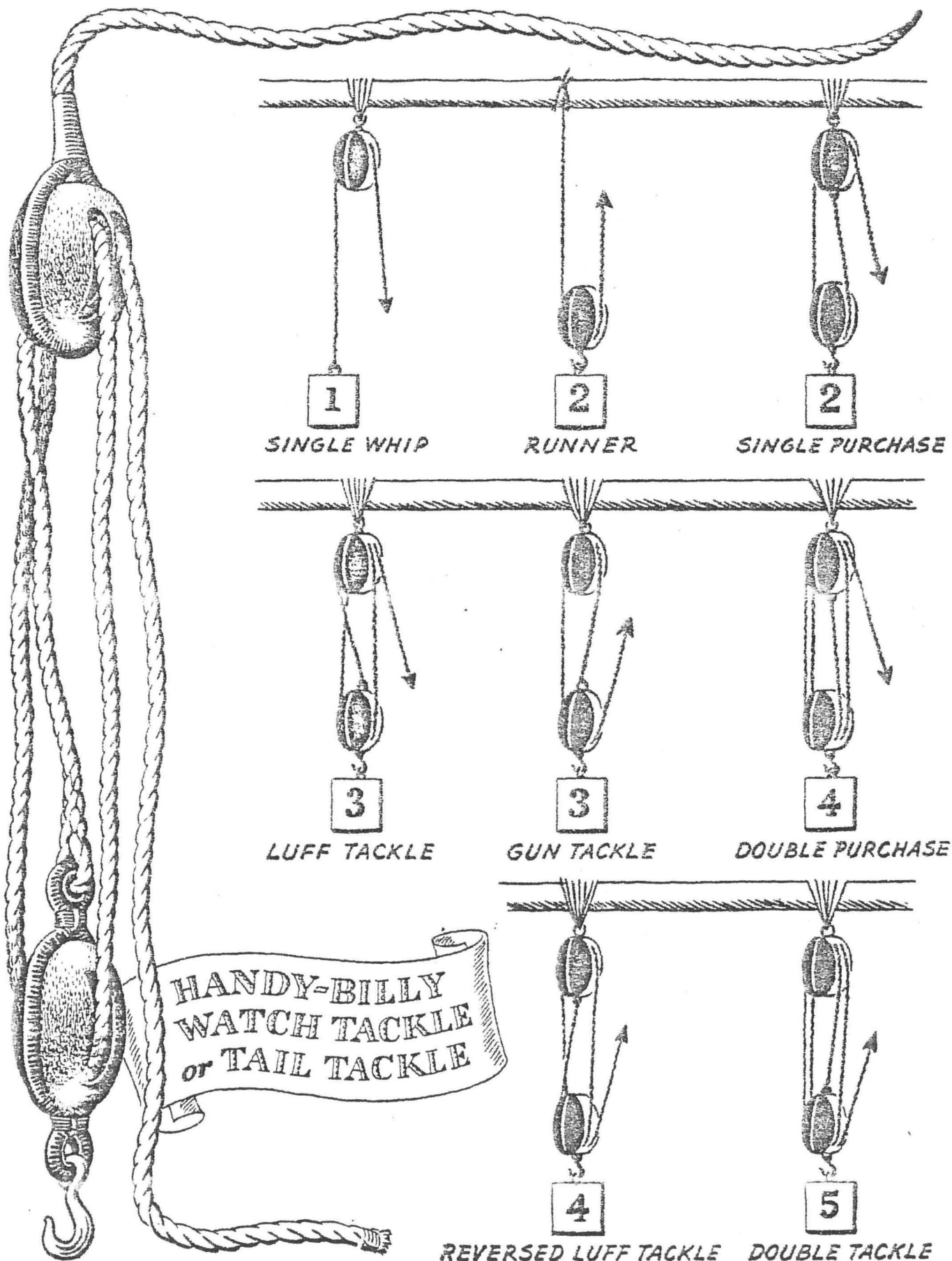
Procedure for Lowering and Recovering the Workboat (Dory)

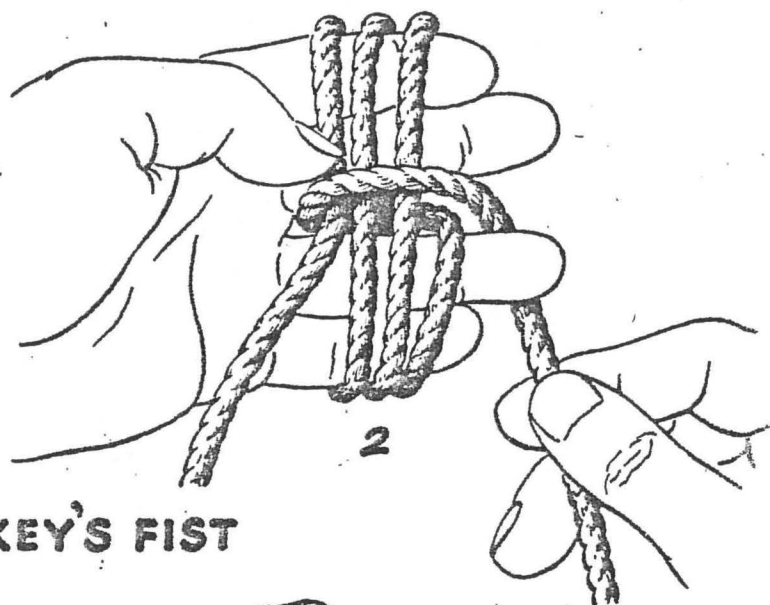
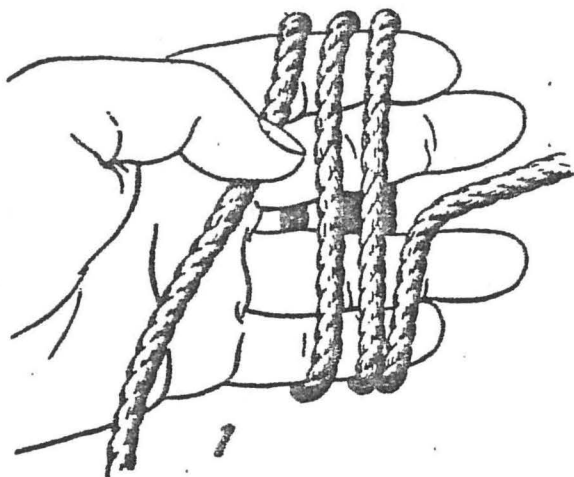
The fishing crew, weather permitting, will lower and recover the workboat and will go fishing in Aquatic Park Lagoon. The boat crew will consist of two children and one adult who shall wear life jackets whenever they are on the ladder or in the boat.

The steps to be used are as follows:

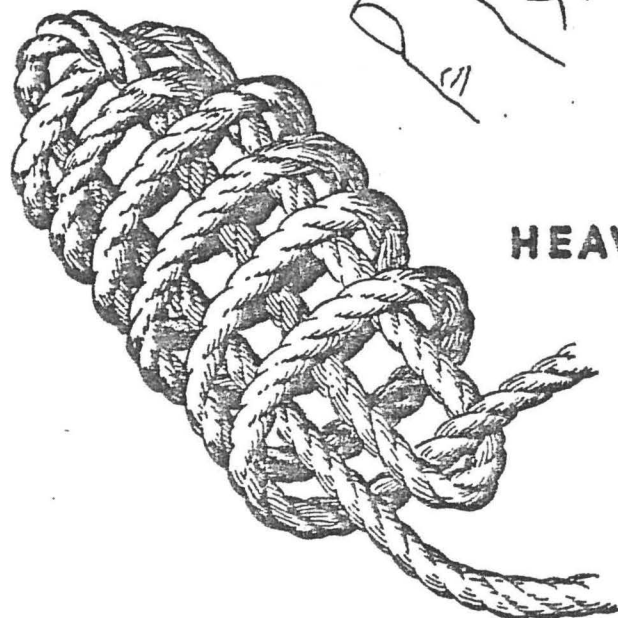
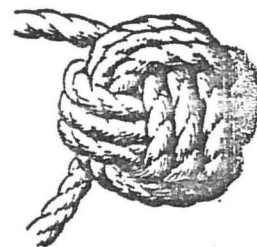
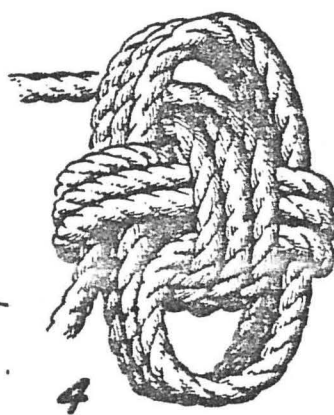
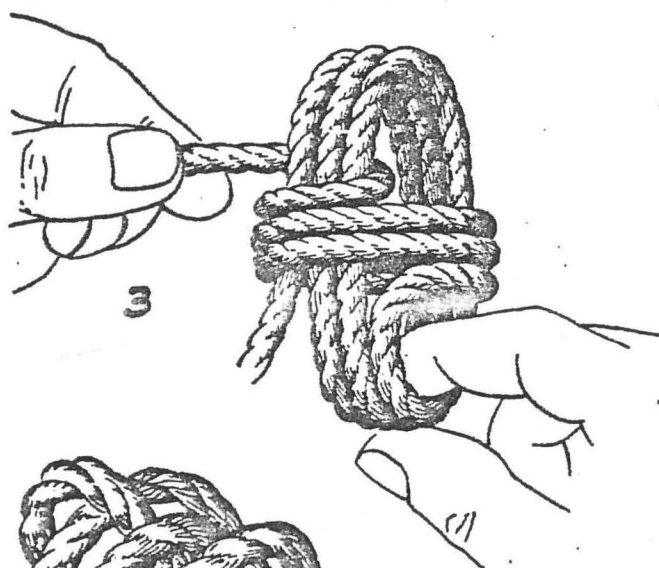
1. Secure the boat plug. The boat is always hung from davits with the plug open so that rainwater will drain freely from the boat.
2. Place the oars and the fishing tackle box securely in the boat.
3. Bend the bow painter to the pier rail near the bow of the boat and the stern painter near the ladder.
4. Assign two or more persons to each boat fall. Remove all but one turn of line from each cruciform bitt and lower the boat evenly into the water.
5. The boat crew shall go down the ladder--one at a time--and board the boat. ALWAYS STAND ON THE THwarts OR IN THE BOTTOM OF THE BOAT--NOT ON THE GUNWHALE (UPPER EDGE).
6. One crew member should release the falls from the boat by removing the hooks from the rings at the bow and the stern.
7. The other crew member takes the oars, places them in the oarlocks, and prepares to row the boat.
8. Someone on the pier must unbend the painters and toss them to the boat crew.
9. To recover the boat, reverse the process.

NOTE: The oars are located in the storage area on the EUREKA car deck, port side. Life jackets are stored in the C.A. THAYER bosun's locker.





The **MONKEY'S FIST**



The **HEAVING LINE KNOT**

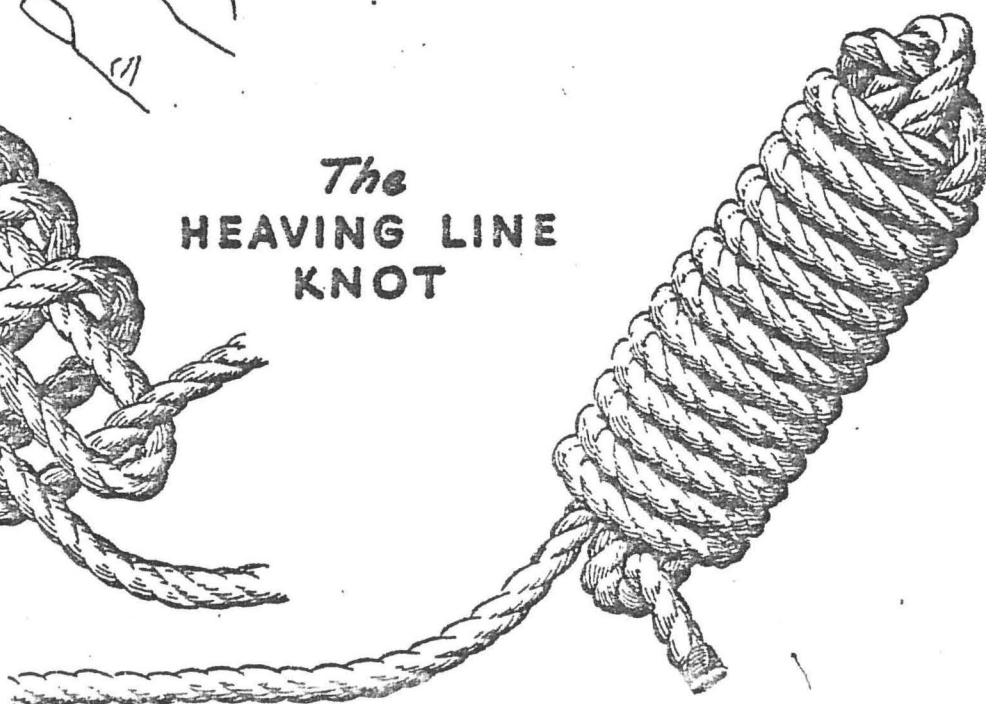
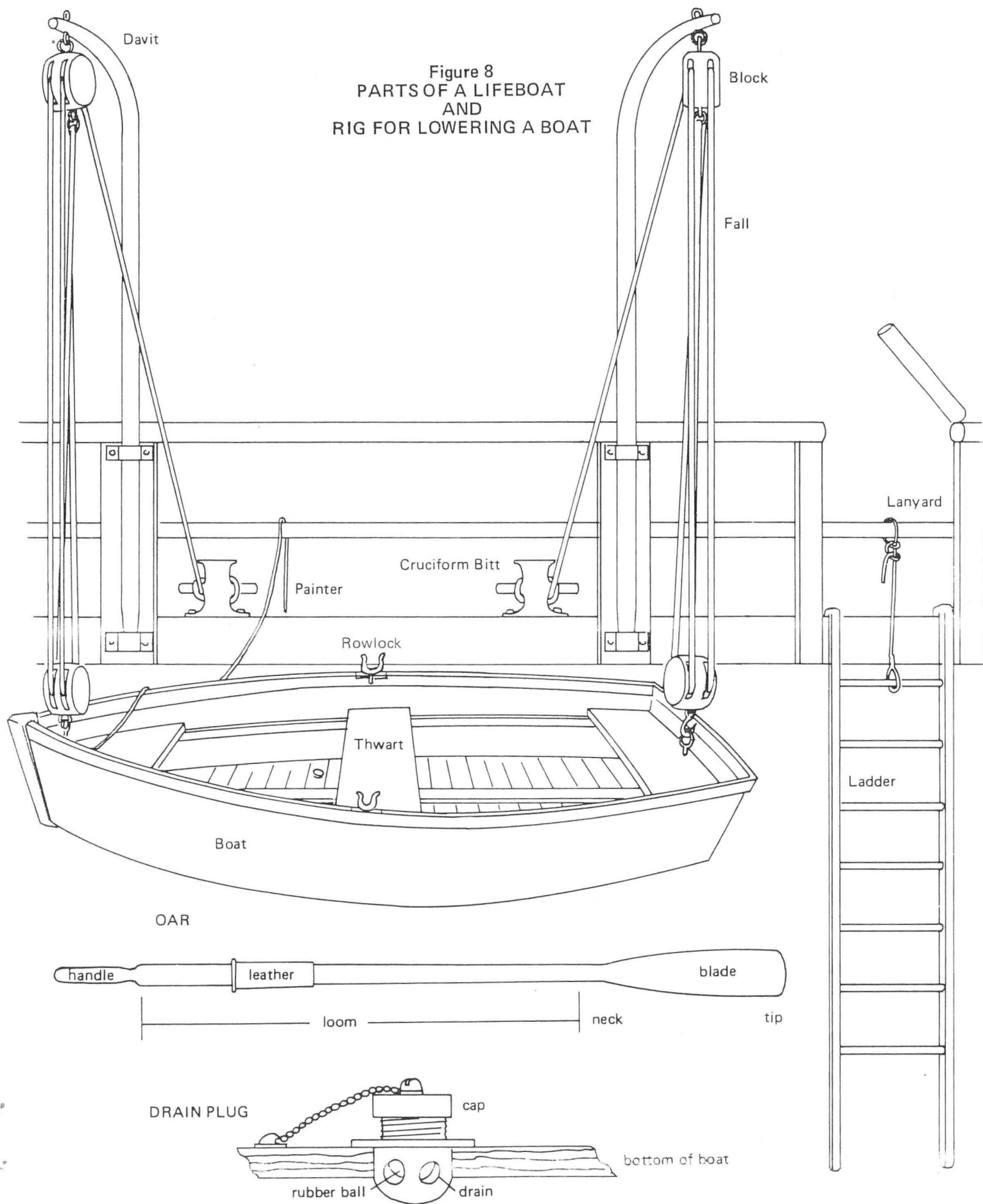


Figure 8
PARTS OF A LIFEBOAT
AND
RIG FOR LOWERING A BOAT



Piloting

"Piloting, in the sense given the word by modern popular usage, is the act of conducting a vessel in channels and harbors and along coasts, where landmarks and aides to navigation are available for fixing the position and where the depth of water and dangers to navigation are such as to require a constant watch to be kept upon the vessel's course and frequent changes to be made therein."

Bowditch, Nathaniel (1773-1838)
The American Practical Navigator

There may be simple piloting problems for your students to work out during their night watches. The basic tools of the navigator used in these problems will be the Mariner's Compass, Parallel Rulers, Dividers, Azimuth Circle, and Lead Line.

A fundamental understanding of time, speed, and distance relationship will be necessary. Speed through the water is customarily expressed in knots. One knot (kt) is a speed of one nautical mile per hour. To say "knots per hour" is incorrect. The time, speed, and distance relationship can be handled by simple arithmetic expressed in the formula $D = S \times T$, where D is distance in nautical miles, S is speed in knots, and T is the time in hours. Thus, a ship traveling at 10 kts. for 5 hours will have traveled 50 nautical miles. (A nautical mile is 1,852 meters or slightly more than 1.1 statute miles.)

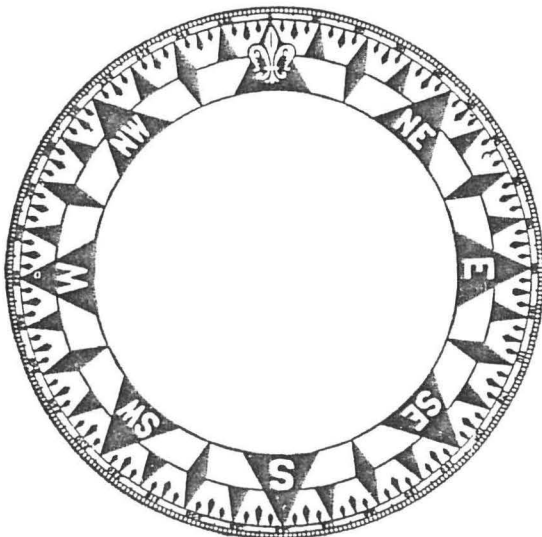
"A useful rule to use. . . is the so-called 'three minute rule,' applied as follows: the travel of a ship in yards in three minutes is equal to the speed of the ship in knots multiplied by 100. Where a six-minute position would be more appropriate than a three-minute plot, the travel of a ship in miles in six minutes is equal to the speed of the ship in knots multiplied by 1/10."

Dutton's Navigation and Piloting

Mariner's Compass

"It has been stated that a magnetic compass depends for its directive force on the earth's magnetic field. The earth acts as if it has a magnet in its interior of sufficient power that its field of influence extends to the surface of the earth. . . The result is that the whole earth acts as a magnet."

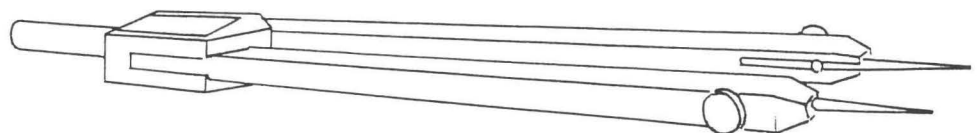
Figure 9
MARINER'S COMPASS



"The basic principle of operation of the magnetic compass is that magnetic materials of the same polarity repel each other and those of unlike polarity attract. In its simplest form, a magnetic compass consists of a magnetized needle freely suspended so that it can turn in any direction. Such a needle tends to align itself with the magnetic field of the earth. Since for most parts of the earth this direction is roughly north-south, the magnetic needle serves to indicate direction."

Dutton's Navigation and Piloting

Figure 10
DIVIDERS



Dividers

Dividers are used by the navigator to measure distances in the chart.

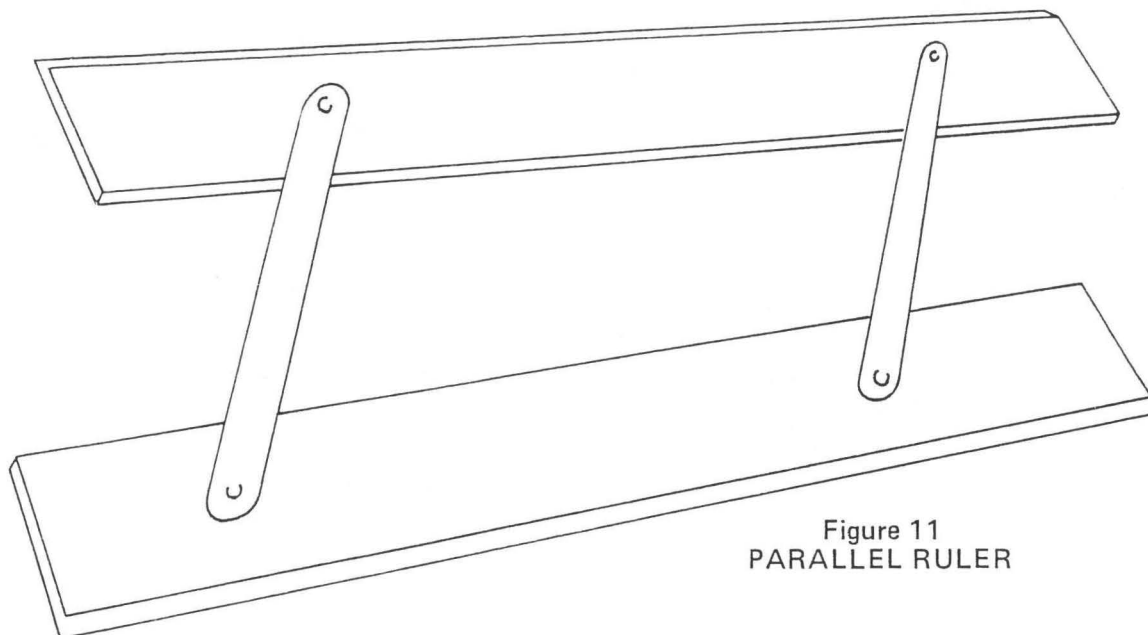


Figure 11
PARALLEL RULER

Parallel Rulers

Parallel rulers "...consist of two bars of the same length connected in such a manner that when one is held in place on the chart and the other moved, it will move parallel to itself, or to its original direction.

"Parallel rulers are used for drawing straight lines, moving lines parallel to themselves, and for measuring direction. When the direction of a line is to be measured, the line is moved parallel to itself to the center of a compass rose and its direction is read from the graduations of the compass rose. To measure a given direction from a point, the direction is transferred from the compass rose to the point."

Dutton's Navigation and Piloting

A compass rose is a compass printed on the chart. Its outer circle is marked in degrees with zero at true north. The inner circle is marked in degrees with zero indicating magnetic north. Only magnetic readings will be used in the piloting problems aboard the *C.A. Thayer*.

Azimuth Circle

"Azimuth Circle — The terms azimuth and bearing are often used interchangeably, to mean the direction of an object from the observer. It is expressed in degrees, using three figures, from 000° at north clockwise through 360°.

"An azimuth circle is an instrument for determining both bearings of terrestrial objects and azimuths of celestial objects. On one diameter of this ring is mounted a pair of sighting vanes, consisting of a peep vane at one end of the diameter and a vertical wire mounted in a suitable frame at the other end. To observe the bearing of a terrestrial object the observer looks through the peep vane in the direction of the object, and by means of the finger lugs provided on the circle, he turns the latter until the observed object is on the vertical wire of the opposite vane. At the base of the opposite vane is a mirror marked with a center line agreeing with the vertical wire of the vane. This mirror reflects the compass card into the field of view of the observer so that he can see the observed object and the compass card at the same time. The compass bearing of the observed object is then read by the position of the vertical wire on the compass card."

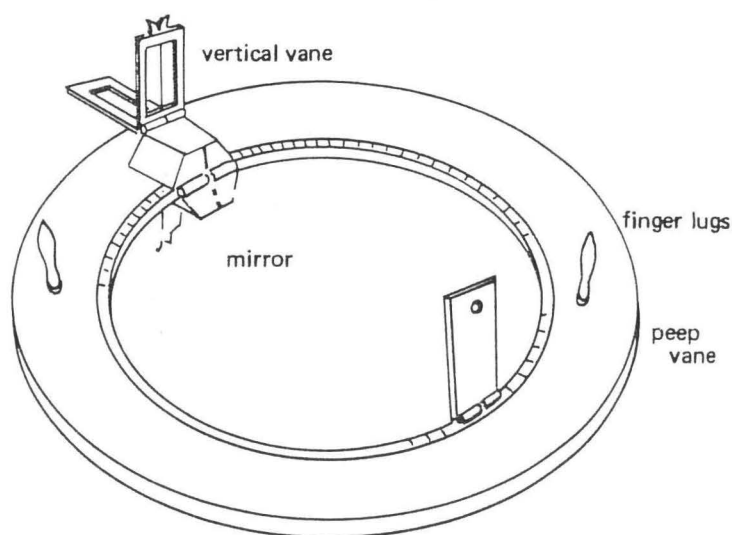


Figure 12
AZIMUTH CIRCLE

Dutton's Navigation and Piloting

Lead Line

"The lead is one of the most useful instruments on board ship. We will consider the hand lead, or blue pigeon, as sailors call it. The illustration shows it very clearly.

"The marks show the depth of water. The fathoms not marked are called 'deeps' of the lead line and together we speak of the 'marks and deeps' of the lead line."

Sea Scout Manual, 1929

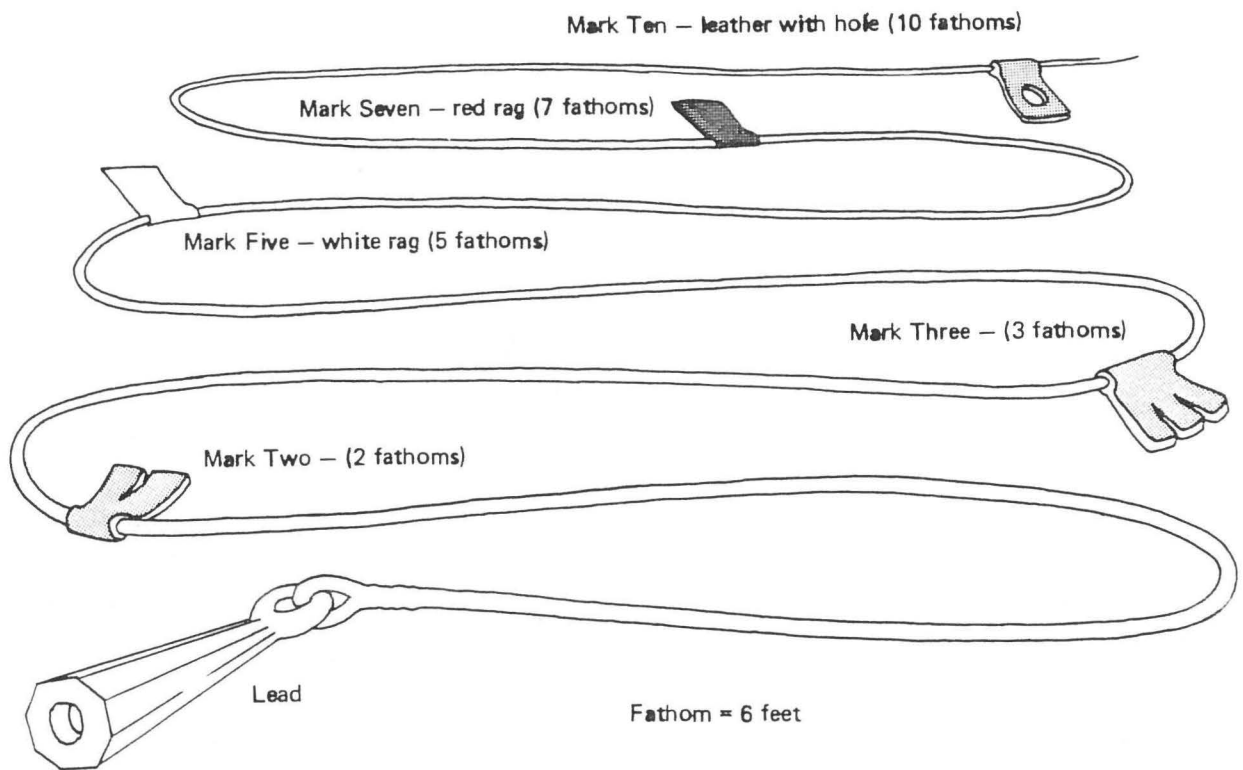


Figure 13
LEAD LINE

Standing Watch

Standing watch is one of the traditions of the sea observed on board the *Thayer*. All crews are expected to stand watch with the exception of the Galley Crew (who rise early to prepare breakfast).

Each watch crew consists of:

1. Mate: maintains his station by the helmsman on the poop deck. He must have a watch to tell time. He will initiate the sounding of the bell on the half hour. He is in command of the ship at this time and will make sure that everything is shipshape.
2. Helmsman: maintains his station at the wheel and checks compass to maintain designated course.
3. Lookout: maintains station on the bow of ship. He warns helmsman and mate of any sightings he may observe. He answers the mate's bell by ringing the forward bell and shouts, "Lights burning bright." If a ship is spotted, he will ring the bell twice if on the port side, and once if on the starboard side and shout, "Ship to port," or "Ship to starboard."
4. Fire and Security Watchman: Maintains station by gangway. He checks all persons leaving or boarding the ship and checks rigging, mooring lines, and general conditions for safe operations. He also maintains fire in galley stove and water in the cooling well around the Charlie Noble.

We encourage classes to come prepared for inclement weather. Warm clothing is a must, because watch is stood on the open deck.

Bell Time

"Bell time on shipboard is based upon the watches. Normally, watches are four hours in length. Each half hour is marked by the striking of the bell, the strokes running from one to eight. Strokes are always given in pairs, where more than one bell is struck. For instance, five bells, would be struck, as shown by the dots,"

Sea Scout Manual, 1929

Each student crew will stand a two-hour (or anchor) watch during the night. The first watch will be set at ten P.M. (2200) and the last watch will end at six A.M. (0600). Each half hour during the night the "mate" on watch will initiate the ringing of bell time as shown.

	Local Time	24 Hr. Time	Bells
Fishing Crew	10:00 P.M.	2200	4
	10:30 P.M.	2230	5
	11:00 P.M.	2300	6
	11:30 P.M.	2330	7
	12:00 Midnight	2400-0000	8
Linehandling Crew	12:30 A.M.	0030	1 .
	1:00 A.M.	0100	2 ..
	1:30 A.M.	0130	3 .. .
	2:00 A.M.	0200	4
Longshoremen Crew	2:30 A.M.	0230	5
	3:00 A.M.	0300	6
	3:30 A.M.	0330	7
	4:00 A.M.	0400	8
Sailmaker Crew	4:30 A.M.	0430	1 .
	5:00 A.M.	0500	2 ..
	5:30 A.M.	0530	3 .. .
	6:00 A.M.	0600	4

These bell signals will be repeated by the lookout using the ship's bell.

CREW ASSIGNMENTS

Galley Crew Assignment

The cook on a sailing vessel, such as the *C.A. Thayer*, was often rated in importance right behind the captain and mates. His domain, the galley (kitchen), was usually found in a small house located on the forward deck so that the smoke and smells of the cooking would go forward with the wind. The cook's chore of feeding a crew of strong, hard-working men from a galley only a few feet square was no small challenge, especially in rough seas.

The wood-burning iron stove on the *C.A. Thayer* has a griddle top and an oven. It is bolted to the floor so that it follows the motion of the ship, as does whatever is cooking on it. A fire is started using very small pieces of wood or paper and kept alive with larger pieces of wood and/or charcoal. The only control for cooking temperatures is the amount of fuel burning in the stove. One chore in using the *Thayer's* stove is to keep the well encircling the Charlie Noble (stove pipe) on the roof of the deckhouse filled with water. This will prevent any chance of fire damage to the deckhouse.

Because of the lack of refrigeration, the variety of food carried on ships during the 19th and early 20th century was very limited. The *Thayer* was probably provisioned in much the same way as were those northeast whale ships described by Lillian Christensen in the *Mystic Seaport Cookbook*. These vessels carried "lots of 'salt horse' or 'salt junk' (an extremely salty dried beef which had to be soaked in water for a day before it could even be boiled), salt pork, potatoes, codfish, hard bread, rice, tea, coffee, beans, dried fruit, lard and molasses. The captain or master of the ship sweetened his coffee with sugar and early in the voyage he had butter for his bread. Rare stops at ports added to the diet fresh meat, fresh fruits and vegetables, water and sometimes even a live pig or some hens. But usually, the only diet change in the endless monotony was a lobscouse or a special treat of plum duff. Lobscouse was a sort of hash stew. . . a bland dish that should taste of good black pepper."

Stews and chowders were probably the most common type of meal on board the *Thayer*. They consisted of just about all the ingredients that the larder of the ship contained. Hardtack, a bland, hard, ship's biscuit, was served frequently both as an ingredient in the stews and along with them. Some foods on board were much less common than salt pork and hardtack. For example, chicken stew and eggs could only be served if the ship housed live chickens, and milk was available only on vessels carrying a live cow.

PROBLEM: Meal Planning and Preparation

As members of the cooking crew, your problem is to:

1. Plan a typical ship's dinner and breakfast menus.
2. Purchase the necessary food and other necessary supplies, such as wood (or charcoal), dishwashing soap, etc.
3. Build and maintain a fire in the stove.
4. Maintain water in cooling well for Charlie Noble through cabin roof.
5. Cook two meals and a morning snack.

1900 — Dinner

0600 — Coffee and Biscuit

0700 — Breakfast

Equipment and material available to accomplish task:

Wood stove and oven with kindling
Coffee pot
Two fry pans
Two dutch ovens
Cutting board
Deep broiler pan
Sauce pan
Large water container
Basic cooking utensils
NO REFRIGERATION

Helpful Hints: Job responsibilities may be divided into the following categories:

- Steward — purchase food
- Head Cook — plan and execute meals
- Assistant Cooks — help cook meals
- Scullery Hands — peel potatoes, chop onions, wash dishes, etc.
- Cabin Boy — replenish wood for fire, supply water, fill stove pipe cooling well on cabin roof.

Task: Ship Maintenance

The Galley Crew is responsible for cleaning up the galley after each meal and washing down floor, bulkhead, and ceiling after breakfast.

NOTE: As in the sailing days of old, ONLY members of this Crew will be allowed inside the kitchen area or adjoining storage area at all times.

Fishing Crew Assignment

As crew members aboard this cod-fishing schooner, you would spend many of your waking hours fishing from a small dory. Launching your dory as early as 4 a.m., you would set out, using oars or sails. (In later years the dory was equipped with a small motor.) At night you would bring back your day's catch to the main ship where it would be cleaned and salted.

PROBLEM: Cod Fishing

Your problem today is to go codfishing. This will involve rigging a line with hooks and bait, lowering a dory, and getting two persons into it who will then row a short distance and fish briefly. The boat should be left in the water with the painter secured to the pier rail. The crew will recover the boat during the wind-up period.

Equipment available:

- Small boat and oars
- Fish line
- Hooks
- Bait
- Life jackets

Hints:

1. Be sure painter from boat is attached to pier before launching.
2. Be sure plug is in boat.

NOTE: All persons in the boat are REQUIRED to wear a life jacket at all times.

Task I: Night watch duties.

Your crew will maintain a night watch between the hours of 2200 and 2400 hours.

At least four members of your crew should be assigned to this duty. (You may rotate among yourselves any way you wish.)

Task II: Ship maintenance.

After being served coffee and a snack (biscuits), the crew turned its attention to the daily tasks of clean-up before breakfast. Swabbing the decks, polishing the brass, cleaning the white work, etc., were done at this time.

Your crew's task will be to remove the straw mattresses from the fo'c'sle and store them. Sweep fo'c'sle, ship's hold, first mate's and captain's cabins.

Equipment to Use; Brooms, baggage cart.

Longshoremen Crew Assignment

The longshoremen were masters of the block and tackle. It was their job to load supplies and gear at the start of a voyage, and unload the tons of codfish at the end of a successful voyage. Strong arms and a strong back were an asset, but by using carefully rigged blocks and tackle, even a very heavy load could be moved with ease.

PROBLEM: Rigging for Loading Supplies

Rig a block and tackle in order to lift a barrel.

Equipment available:

1. Two double-sheaved (purchase) blocks, one equipped with a becket (See Fig.14), two triple purchase blocks, and two single purchase blocks.
2. A 50-fathom line for fall
3. Thimbles (see p. 9)
4. Line for barrel sling
5. Material for whipping

NOTE: See pages 6, 7 and 8.

Task I: Night watch duties

Your crew will maintain a night watch between the hours of 0200 and 0400 hours.

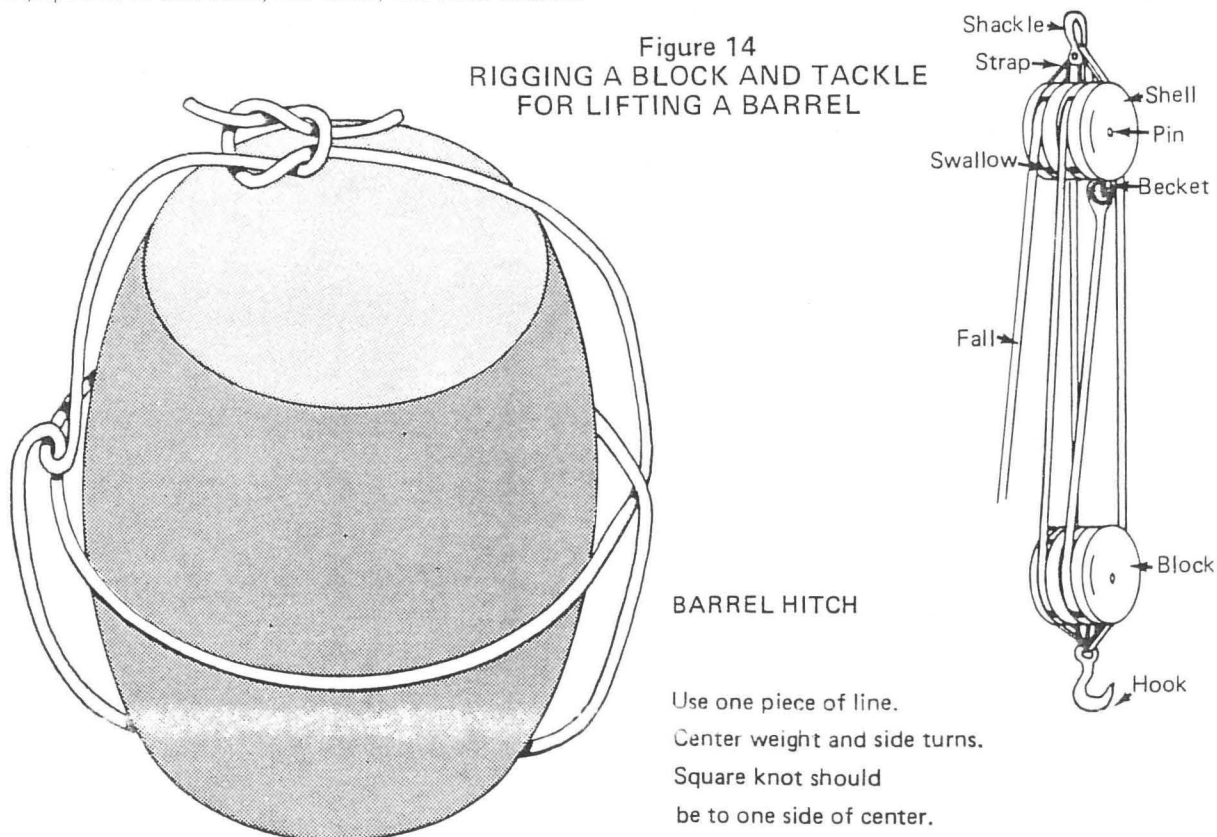
At least four members of your crew should be assigned to this duty. (You may rotate among yourselves any way you wish.)

Task II: Ship maintenance

After being served coffee and a snack, the crew turned its attention to the daily tasks of clean-up before breakfast. Swabbing the decks, polishing the brass, cleaning the white work, etc., were done at this time.

Your crew's task will be to hose down the deck and sweep it dry.

Equipment to use: Hose, salt water, and scrub brushes.



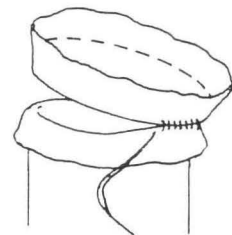
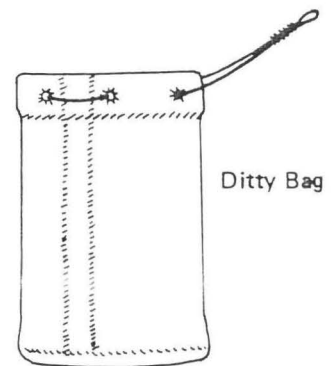
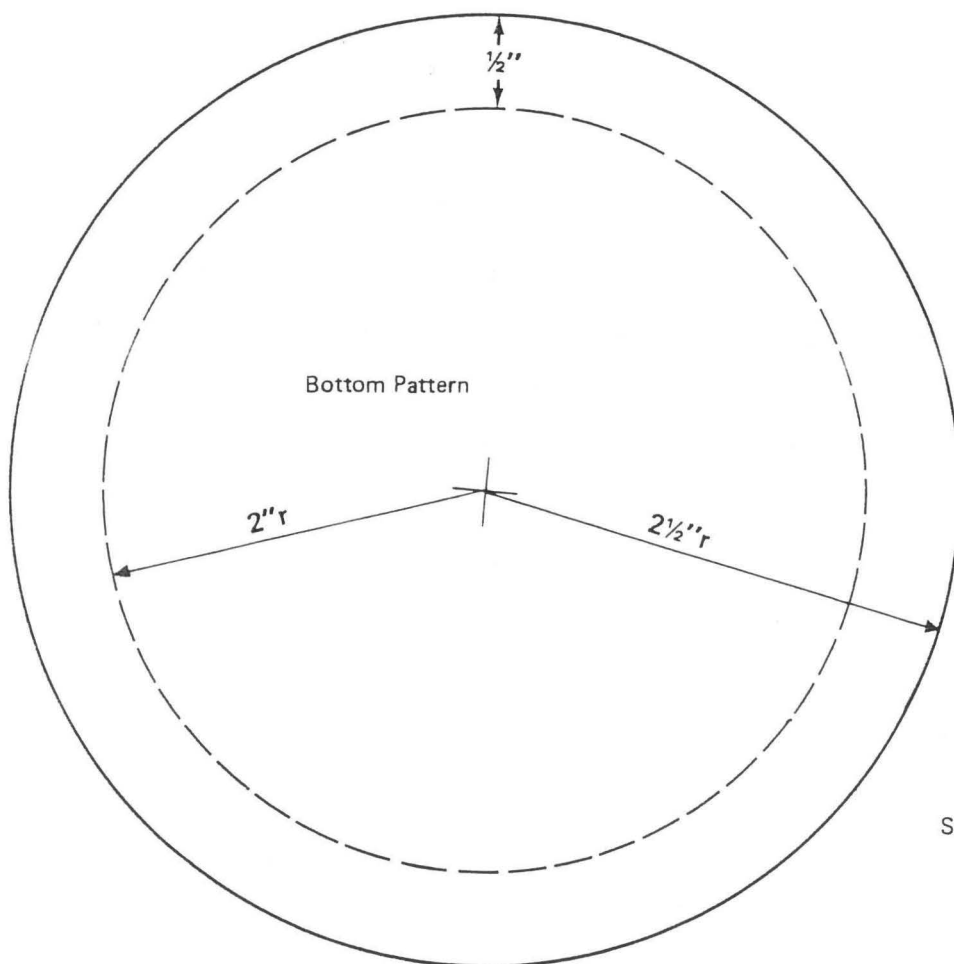
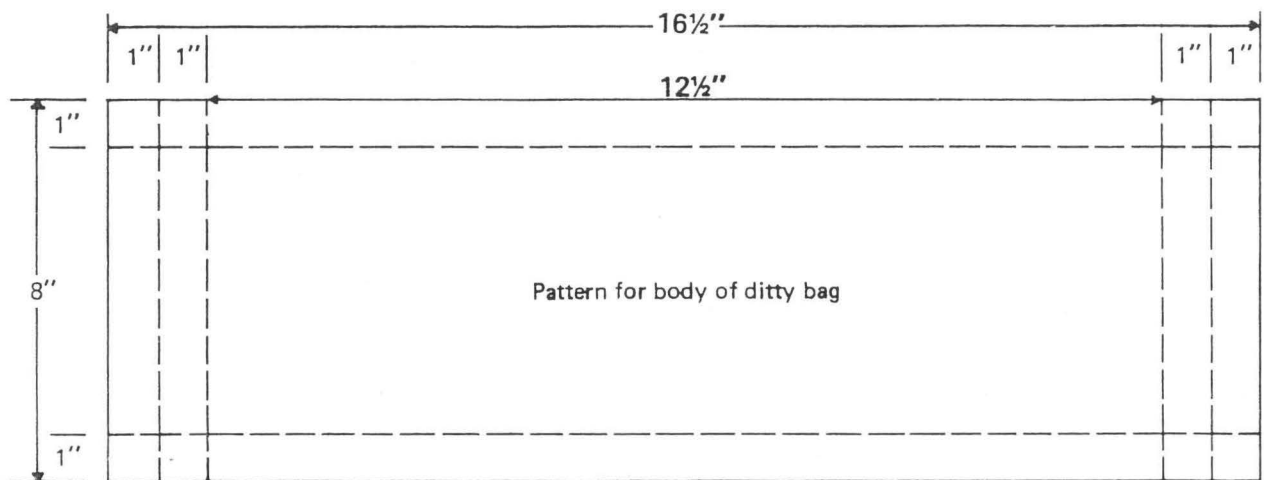
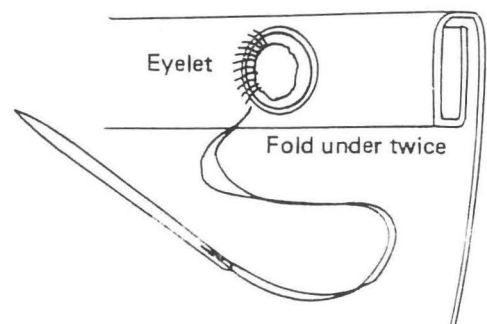


Figure 15
MAKING A DITTY BAG

NOTE: Finished bag dimensions should be $6"$ high x $4"$ in diameter. The ditty bag pattern may be expanded or reduced in size as long as the finished height is $1\frac{1}{2} \times$ the diameter.



Sailmaker Crew Assignment

As sailmakers aboard the *C.A. Thayer*, you are very important members of the crew. In addition to making and repairing the sails, you also provide sail and dunnage bags, boat and hatch covers, covering for handrails, etc.

PROBLEM: Making a Ditty Bag

Your problem for today is to make canvas ditty bags (used by sailors to hold their sewing gear and other sundry articles). You will need to know how to:

1. Thread the needle
2. Sew seams
3. Make grommets for eyelets
4. Make a lanyard

Equipment available:

Sail twine
Sail needles
Wax
Canvas
Scissors
Leather palm with small metal seat for holding and pushing the needle through the canvas
Sailmaker's bench
Sailmaker's hook
1/8" cotton line for lanyard

NOTE: Diagrams included here will aid you in working on this project. You may vary the suggested pattern.

Task I: Night watch duties.

Your crew will maintain a night watch between the hours of 0400 and 0600 hours.

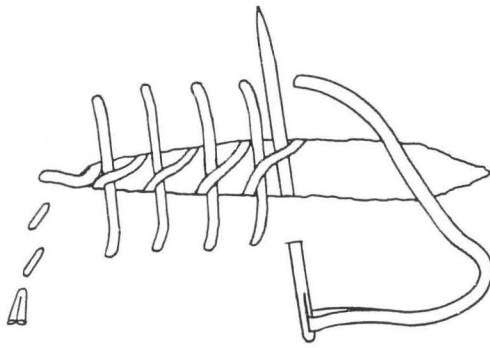
At least four members of your crew should be assigned to this duty. (You may rotate among yourselves any way you wish.)

Task II: Ship maintenance

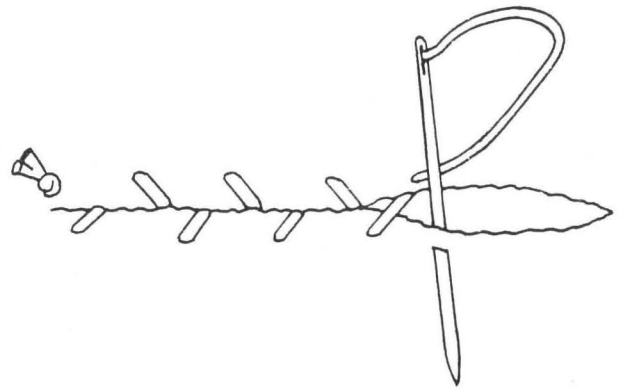
After being served coffee and a morning snack, the crew turned its attention to the daily work of cleaning ship. Swabbing decks, polishing brass, cleaning white-work, etc., were done at this time.

Your crew's task will be to polish brass and clean white paintwork.

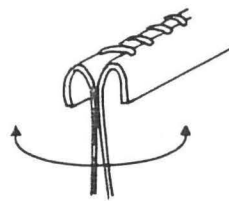
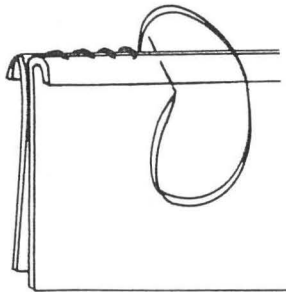
Equipment to use: Brass polish and rags, scrub brush, cleanser, bucket.



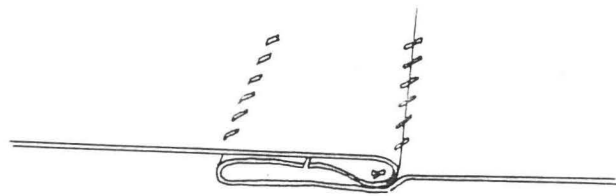
Herringbone Stitch



Baseball Stitch

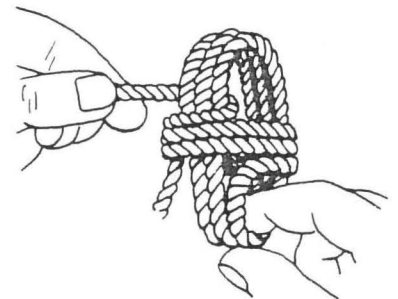
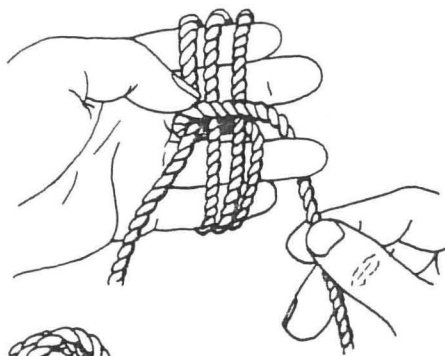
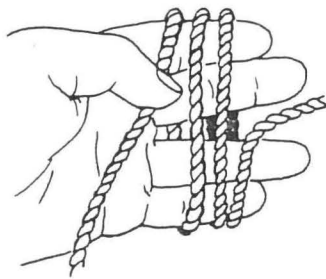


Round Seam



Flat Seam

Figure 16
TYPES OF STITCHES AND SEAMS



Monkey's
Fist



Figure 17
MAKING A MONKEY'S FIST

Linehandling Crew Assignment

PROBLEM: Rigging Mooring Line and Raising a Sail

As members of the deck crew, you are ordered to rig a mooring line from the bow of the ship to the pier, and hoist the forestaysail.

Equipment and material available to accomplish task:

1. 7-inch hawser
2. Heaving line and small weight
3. Capstan — a device that was used as a winch for innumerable purposes such as loading cargo, hoisting sails, pulling up anchor, making mooring lines taut, etc. The power for the capstan was supplied by the sailors pushing capstan bars, causing the capstan to rotate in a circle and wind the rope around itself.
4. Capstan bars

Remember: *No One* is to climb on any part of the ship's rigging.

Hints: A heaving line will have to be made up. Using the line supplied, make a Monkey's Fist as shown in the accompanying illustrations. A small weight will be supplied to be slipped into the center of the Monkey's Fist.

When the mooring line is brought back aboard ship, it is to be coiled down on deck. Remember, right-hand laid rope is coiled clockwise.

If time and weather conditions permit, the ranger will assist you in raising a sail.

Task I: Night watch duties

Your crew will maintain a night watch between the hours of 2400 and 0200 hours.

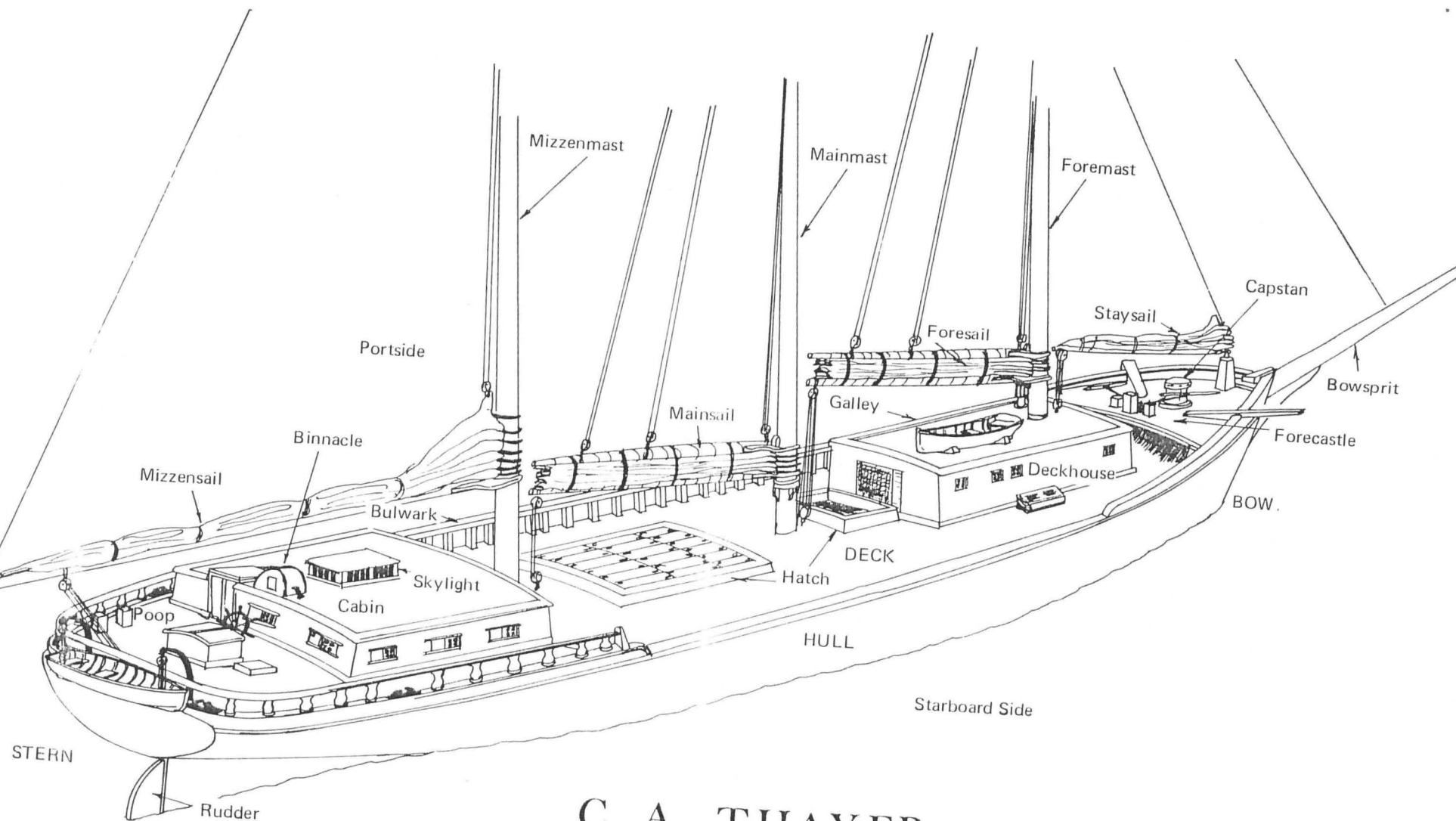
At least four members of your crew should be assigned to this duty. (You may rotate among yourselves any way you wish.)

Task II: Ship maintenance

After being served coffee and a morning snack, the crew turned its attention to the daily tasks of clean-up before breakfast. Swabbing the decks, polishing the brass, cleaning the white-work, etc., were done at this time.

Your crew's task will be to lower the forestaysail and then assist the longshoremen with swabbing decks.

Equipment to use: Hose, salt water and scrub brushes.



C. A. THAYER

Glossary

Abaft:	Astern of or toward the stern of the ship.
Aft:	In rear, to, or towards the stern.
Aloft:	In the rigging, above the deck.
Amidships:	In the middle of the ship.
Anchor:	Iron or iron and wood device to hold ship in one place by digging into the bottom.
Astern:	Behind the ship.
Athwartship:	Across in the direction of a thwart or rowing seat.
Avast:	Stop, quit what you are doing.
Azimuth:	Intercepted arc of horizon between observer's meridian and a vertical circle passing through an observed object.
Beam:	Width of a ship at the widest point. A point exactly abreast is "on the beam;" a little ahead, "before the beam;" a little behind, "abaft the beam."
Bearing:	Direction in which an object, or position, lies from an observer. Usually defined as an angular measurement between a line from an observer's position and a datum line passing through that position.
Belay:	To make a line fast, to stop. To take one or more "S" turns with a rope around a cleat or belaying pin without tying it in a knot. Also, to cancel an order.
Bend:	To fasten, as bending sail; also a type of knot. A general term for fastening anything, as to bend one rope to another, to bend an anchor to its cable, etc.
Bight:	The bend or loop in a rope; the double part of a folded rope. In knotting, that part of a rope between the end and the standing part.
Bilge:	The lowest internal part of the hull where the bilge water collects.
Binnacle:	Case or housing for the ship's compass.
Bits:	Heavy posts of wood or cast iron on the deck to which lines are made fast.
Block:	Wood or metal case for sheave (pulley) or sheaves.
Bollard:	Single or double cast steel posts secured to a wharf or pier, and used for mooring vessels by means of lines extending from the vessel and secured to the posts.
Boom:	A spar for extending the lower edge of a sail. Used on fore-and-aft sails and jibs.
Bow:	The whole forward end of a boat or ship.
Bulkhead:	Any transverse partition on a ship; a wall.
Bulwark:	Solid rail along the ship's side.
Cabin:	A space for passengers of rank.
Capstan:	A revolving barrel, driven by capstan bars operated by a number of men, for the very heaviest pulling, as breaking out and raising the anchor.

Charlie Noble:	The galley stove smoke pipe.
Cleat:	A piece of wood or metal with single or double horns used for belaying ropes.
Contline:	Angular space or groove between strands of a rope.
Davit:	Metal crane affair to raise boats from the water and swing them aboard.
Decks:	The "floor" of a ship.
Draft:	The depth of water needed to float a boat clear of the bottom.
Dory:	Flat-bottomed boat with sharp ends, and sides sloping upward and outward.
Ensign:	The national flag.
Fall:	Hauling-part of a purchase or tackle. Rope by which a boat is hoisted.
Fathom:	Six feet, a measurement of length.
Fore-and-Aft Rig:	Having sails set behind the mast with spars parallel (when at rest) to the direction of the keel.
Forecastle:	Raised part of deck in the bow or the crew's quarters; also called fo'c'sle.
Foremast:	The first mast in line.
Gaff:	A spar for extending the head (top edge) of a fore-and-aft sail.
Galley:	The kitchen on a boat.
Hatch:	An opening in the deck provided with a hatch cover and with a kind of box built around it to keep water out.
Hawser:	A fiber rope 5-24 inches in circumference used for towing, working the ship, or mooring.
Head:	The ship's toilet.
Hull:	The whole body of a ship.
Inboard:	Towards the center; on the ship, inside the bulwarks or rail.
Keel:	The long timber from end to end of the outside of a ship's bottom; backbone of a ship's structure.
Lanyard:	A short, light line used as a lashing.
Line:	The sailor's word for rope.
Mainmast:	A sailing vessel's principal mast, usually second from the bow.
Mast:	A vertical spar for supporting sails and rigging.
Mizzenmast:	Mast next aft of the mainmast; usually third mast from the bow.
Mooring Line:	Large ropes used to secure a ship to a dock or pier.
Mouse:	To fasten a piece of small stuff (e.g., yarn) on a hook used in the rigging to prevent the hook from falling out.
Outboard:	On the hull outside the bulwark or rail.

Painter:	A line in the bow and stern of a small boat for tying her to ship, mooring, landing, or for towing.
Poop:	The high deck at the stern. The name comes from a similar deck on Roman ships (the <i>puppis</i>) where the images of the gods were kept.
Port:	The left side of a vessel, as one stands facing forward.
Ratlines:	Light tarred lines secured horizontally across the shrouds at regular intervals to serve as ladders into the rigging.
Reeve:	To pass a line through a hole as in a block (past tense = rove).
Rigging:	The cordage and spars necessary to hold the sails in place and manage them.
Rowlock:	Opening in which an oar is pivoted when rowing.
Running Lights:	A general term applied to the various lights carried from sunset to sunrise by different classes of vessels when underway, in accordance with the International Regulations for Preventing Collisions at Sea.
Seize and Stop:	To lash two or more pieces of rope together is to seize them.
Sheave:	The grooved pulley wheel in a block.
Slack away (Slack off):	To pay out rope without losing control over the rope.
Spar:	Any support for sails or rigging as mast, yard, boom, gaff.
Splice:	To join the ends of two ropes by interweaving the strands of each into the other.
Stand by:	To be in readiness. To be prepared to execute an order.
Standing part:	In knotting, the main part of a rope, as distinguished from the bight and the end.
Starboard:	The right side of a boat, as one stands facing forward.
Stern:	The whole after or backend of a ship.
Stow:	To put away in its proper place; applied to anything loose.
Tackle:	(pronounced "taykle") Rope rigged through and around pulleys (blocks) to increase the effect of pull applied.
Thimble:	A round or heart-shaped fitting made from gunmetal, galvanized iron, solid or light brass, with a deep score in its outer surface which can hold an eye splice to prevent wear on the splice.
Thwart:	Transverse seat in a boat, for rowers to sit on.

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Appendix A Menus

Here are four suggested dinner and breakfast menus. These meals are similar to what the seamen ate and are practical in terms of cost, utensils required, equipment available in the *Thayer's* galley, and relative time and skill required.

Along with the recipes for carrying out these meals, you will find a shopping list of stores. The various dishes may certainly be interchanged or substitutions made. (Be sure you change the list of stores to be purchased accordingly.) Ingredients and directions for the 6 A.M. snack have not been included. However, any simple biscuit recipe will suffice, and extra flour and other ingredients for biscuits should be included on your shopping list.

Menus

Menu I

Dinner: Chicken Stew
Boiled Rice
Hardtack
Brown Sugar Pudding
Coffee

Breakfast: Salmon Hash
Johnnycakes
Coffee

Menu II

Dinner: Lobscouse
Brown Mustard
Cheese
Hardtack
Gingerbread
Coffee

Breakfast: Potato Scones
Bacon
Dried Stewed Prunes
Coffee

Menu III

Dinner: Corned Beef Hash
Supper Biscuits
Pickles
Bread Pudding
Coffee

Breakfast: Oatmeal
Salt Pork (fried)
Hardtack
Coffee

Menu IV

Dinner: Basic Fish Chowder
Cheese
Bread
Shortcake
Coffee

Breakfast: Corn Meal Mush
Bacon
Biscuits
Coffee

Menu I Recipes

Chicken Stew Serves 30

2 cups flour
2 cups shortening
18 quarts water
6 chickens, cut up
Salt and pepper to taste
6 small onions, finely chopped
Chopped parsley (optional)

1. In kettle combine flour and shortening. Cook, stirring constantly, until mixture is almost black.
2. Immediately add water, bring to low boil.
3. Add chicken, seasonings, onion, parsley. Cover and simmer for 1-1½ hours (chicken should always be covered, add more water if necessary).

Serve over rice.

Boiled Rice

8 quarts water
8 teaspoons salt
8 cups uncooked rice

1. Bring water to a rapid boil in large pot. Add salt and sprinkle in the rice. Do not stir. Boil for exactly 20 minutes.
2. Pour off any remaining water.
3. Partly cover the pot and set aside on lowest heat for about 7 minutes.
4. When rice appears dry on top, shake it well. Serve.

Brown Sugar Pudding Serves 30

10 cups boiling water
8 cups brown sugar
2½ cups milk
5 tablespoons softened butter
5 cups flour
10 teaspoons baking powder
2½ cups seedless raisins

1. Grease pan.
2. Prepare syrup — in saucepan combine water and 5½ cups of brown sugar.
3. In mixing bowl, combine milk, butter, remaining sugar, flour, baking powder; beat until smooth; stir in raisins.
4. Pour syrup into large pan; pour batter in center of syrup.
5. Bake in oven 25-30 minutes.

Salmon Hash Serves 30

6 cans salmon, 1-lb. cans
5 pounds potatoes, mashed
10 ounces beef stock
3 pounds onions

1. Peel potatoes, cut in chunks and boil until tender. Drain and mash.
2. Separate the salmon into bite-size chunks.
3. Mix salmon and potatoes well; add the beef stock a little at a time. Season with salt and pepper.
4. Spread in a greased pan and bake in the oven for about 30 minutes. Serve hot.

Johnnycakes Makes 48

6 cups white or yellow corn meal
A little salt
Boiling water
6 eggs
Milk
Shortening

1. Put corn meal into mixing bowl. Add salt.

2. Make a well in center of meal. Pour in water to scald mixture. Let stand for a few minutes.
3. Beat in eggs.
4. Thin batter by adding milk and beating well until it has the consistency of pancake batter.
5. Drop by spoons in hot shortening in fry pan. Cook thoroughly on one side before turning. Do not cook too fast, or inside will not be done.

Stores

2 pounds flour
 1½ pounds shortening (3 cups)
 6 chickens
 1 box salt
 1 container pepper
 5 pounds onions (about 15)
 2 pounds rice
 3 pounds brown sugar
 1 quart milk (more if needed for coffee and to drink)
 1 pound butter
 1 box baking powder
 1 pound raisins (2½ cups)
 6 cans salmon (1-lb. cans)
 5 pounds potatoes
 1 can beef stock
 2¼ pounds corn meal (6 cups)
 6 eggs
 Hardtack (pilot biscuits)
 Parsley
 Coffee
 40 pounds of charcoal
 Dishwashing soap

Menu II Recipes

Lobscouse Serves 30

8 lbs. beef, cut into small cubes
 2 cups flour
 2 teaspoons salt
 1 teaspoon pepper
 1-1/3 cups butter
 12 large onions, sliced
 20 large potatoes, peeled and cubed
 20 peppercorns
 Salt
 4 bay leaves
 12 cups boiling beef stock

1. Dredge meat with mixture of flour, salt, and pepper. Melt butter in a heavy dutch oven and fry the onions until golden, about 7 minutes.
2. Take out onion slices with a slotted spoon and fry dredged meat, stirring, until evenly browned on all sides.
3. Take out meat and fry potatoes until lightly browned. Push potatoes to sides, return meat to the center, and spread onions over potato border.
4. Add salt to taste, peppercorns, bay leaves and the boiling stock. Cover tightly and simmer for 1 hour over very low heat without disturbing.

Gingerbread (White)

2 cups shortening
4 cups sugar (2 lbs.)
4 eggs
4 teaspoons ground ginger
2 teaspoons baking soda
2 teaspoons salt
10 cups flour
2 cups milk

1. Combine all ingredients; mix well. The batter will be stiff.
2. Spread batter on a cookie sheet or in a shallow pan. Sprinkle top with sugar before baking and bake in oven for about 25 minutes.

Potato Scones Serves 32

8 lbs. cooked and mashed potatoes (may be prepared the previous night)
½ lb. melted butter
8 cups flour
4 teaspoons salt

1. Mix all ingredients into a soft dough.
2. Roll out to a 1-inch-thick round, and cut, pie fashion, into wedges.
3. Bake in hot buttered fry pans for 3 to 4 minutes on a side. Serve hot with butter.

Stewed Prunes Serves 30

2 lbs. prunes
1 lb. sugar

1. Night Before: Wash prunes. Cover with cold water; bring to a boil and cook until tender (30 to 50 minutes). Add sugar for last 5 minutes of cooking.
2. Let stand overnight. Serve cold.

Bacon Serves 30-35

Cut about five slices to the inch. Fry in fry pan, stirring occasionally so that bacon is thoroughly cooked. If dry salt bacon is used, place in a bake pan containing boiling water and boil for 5 minutes before frying. (Drain boiled bacon slices thoroughly before frying.)

Stores

8 pounds beef
5 pounds flour
1 box salt
1 container pepper
2 pounds butter
12 onions
14 pounds potatoes (about 40-45)
20 peppercorns
4 bay leaves
10 cans beef stock (or 12 bouillon cubes)
1 pound shortening (2 cups)
5 pounds sugar
4 eggs
1 container of ground ginger

1 container of baking soda
1 quart milk (more if used for drinking)
2 pounds prunes
4 pounds cheese (American cheddar or caraway)
5 pounds bacon (slab)
Hardtack (pilot biscuits)
Coffee
Brown mustard
40 pounds charcoal
Dishwashing soap

Menu III Recipes

Corned Beef Hash Serves 30

10 pounds sliced corned beef, gristle removed
30 boiled potatoes, peeled and diced
10 onions, trimmed and sliced
2½ cups bouillon or stock
Salt and pepper
20 tablespoons butter (1¼ cups)

1. Chop meat, potatoes, and onions together in large bowl. Add bouillon and season to taste.
2. Heat butter in deep broiler pan, add meat mixture and stir until heated through.
3. Press down evenly and continue to cook over medium heat until there is a crisp crust on underside, 20-25 minutes. Serve hot.

Supper Biscuits

8 cups flour
4 tablespoons baking powder
4 teaspoons salt
24 tablespoons vegetable shortening (1½ cups)
3 cups milk

1. Combine first four ingredients; then stir milk in gradually.
2. Role out into a ½-inch-thick sheet and cut into 2½-inch rounds. Place close together in a buttered baking pan and bake in hot oven for about 25 minutes.
3. Serve hot with butter.

Bread Pudding Serves 32

8 cups bread crumbs
16 cups milk (4 quarts)
16 eggs
2 cups sugar
4 teaspoons cinnamon

1. Soak crumbs in milk for 20 minutes.
2. Grease dutch oven.
3. Add eggs, sugar and spices to crumb mixture; mix well. Turn into dutch oven and bake in oven for about 1 hour.

Oatmeal Serves 30

3 pounds of oatmeal (1 carton regular style (2 lb. 10 oz.) should suffice)

¼ cup sugar

2 tablespoons salt

2 gallons water

Bring salted water to a boil; add oatmeal slowly, add sugar and boil for 5 minutes. Let simmer 30 minutes and serve.

Stores

10 pounds corned beef

30 potatoes

10 onions

2 cans beef stock (or two bouillon cubes)

1 box salt

1 container pepper

2 pounds butter

2 pounds flour (8 cups)

1 container baking powder

1½ cups shortening

5 quarts milk (more if used for drinking or with oatmeal)

1½ pounds bread crumbs (8 cups)

16 eggs

1 pound sugar (more if used on oatmeal)

1 tin cinnamon

1 box old-fashioned oatmeal (2 lb. 10 oz.)

3 pounds salt pork

Hardtack (pilot biscuits)

Coffee

Pickles

40 pounds charcoal

Dishwashing soap

Menu IV Recipes

Basic Fish Chowder Serves 30-35

15 pounds fish, cut into thin slices or chunks

Salt and pepper

1½ pounds salt pork, sliced thin

30 potatoes, peeled and cut into thick slices

10-12 cups broken "hardtack" pilot biscuits

1. Sprinkle the fish with salt and pepper.
2. Fry the salt pork in a dutch oven or kettle until golden.
3. Place a layer of fish on the pork and cover fish with a layer of potato slices; season. Add a layer of broken biscuits and continue layering the ingredients until they are all used (at least 3 layers of fish).
4. Add water just to cover the ingredients. Cover the kettle and simmer, do not boil rapidly, for 1 hour.

Shortcake Serves 25-35

12 eggs
6 cups sugar
6 cups flour (cake)
1 teaspoon salt
2 tablespoons baking powder
6 tablespoons melted butter
3 cups hot milk

1. Grease pan.
2. Beat eggs in mixing bowl. Gradually add 6 cups of sugar. Beat until thickened and yellow.
3. Fold flour, salt, baking powder into eggs. Stir in butter and milk.
4. Turn into pan — bake 30 minutes approximately.

Corn Meal Mush Serves 30

3 pounds corn meal, yellow or white (white preferred)
1 pound sugar
2 gallons water
2 tablespoons salt

Bring the salted water to a boil, then add the sugar and corn meal, whipping briskly to prevent lumping. Cook on low heat for about 20 minutes and then allow to stand about the same length of time where it will remain hot. May be served with milk.

Biscuits

See Menu III Recipes (supper biscuits).

Bacon

See Menu II Recipes.

Bread

Frozen bread loaves should be thawed and allowed to rise in warm place before arriving at ship. Bake according to package directions.

Stores

15 pounds fish	4-5 frozen loaves bread dough
1½ pounds salt pork	Coffee
30 potatoes	5 pounds bacon (slab)
10-12 cups broken hardtack	40 pounds charcoal
1 dozen eggs	Dishwashing soap
7 pounds sugar (14 cups)	
2½ pounds flour (10 cups)	
1 box salt	
1 container baking powder	
1 pound butter	
2 quarts milk (more if used for drinking)	
3 pounds corn meal	
¾ cup shortening	
4 pounds cheese (American cheddar or caraway)	

Appendix B

The Sea Shanty

Sea shanties are a form of folk music which originated with sailors aboard sailing ships. Shanties were used to while away the time during the evening dogwatch. More importantly, they were used to lighten heavy work about the ship.

Consider if you will, a group of men trying to move a heavy object. If each pushes independently, not much is likely to happen. However, if the group pushes in unison, then all effort is concentrated and the object is more likely to move. Concentrating the efforts of a group was the primary purpose of the sea shanty.

The rhythm of the sea shanty set the rhythm of the crew's work. There are, accordingly, four types of sea shanty. The "Short-Drag" shanty which is an advanced form of "Yo-heave-ho'ing" while pulling or hauling on a line. The "Halyard Shanty" was used for longer, heavier tasks such as hoisting sail. "Capstan Shanties" were used for a continuous action such as hoisting anchor or tightening a mooring line using the capstan. The "Forecastle Shanty" or song was essentially a means of self-entertainment.

Blow, Ye Winds

F

'Tis ad - ver - tised in Bos - ton, New

F Bb

York and Buf - fa - lo, Five hun - dred brave A -

F C7

mer - i - cans, a - whal - ing for to go, sing - ing,

F

Blow, ye winds in the morn - ing, And

F Bb

blow, ye winds, high - o! Clear a - way your

F C7 F

run - ning gear, And blow, ye winds, high - o!

Blow Ye Winds, continued

They send you to New Bedford, that famous whaling port,
And give you to some land-sharks to board and fit you out.

They send you to a boarding-house, there for a time to dwell;
The thieves they there are thicker than the other side of hell!

They tell you of the clipper-ships a-going in and out,
And say you'll take five hundred sperm before you're six months out.

It's now we're out to sea, my boys, the wind comes on to blow;
One half the watch is sick on deck, the other half below.

But as for the provisions, we don't get half enough;
A little piece of stinking beef and a blamed small bag of duff.

Now comes that damned old compass, it will grieve your heart full sore.
For theirs is two-and-thirty points and we have forty-four.

Next comes the running rigging, which you're all supposed to know;
'Tis "Lay aloft, you son-of-a-gun, or overboard you go!"

The cooper's at the vise-bench, a-making iron poles,
And the mate's upon the main hatch a-cursing all our souls.

The Skipper's on the quarter-deck a-squinting at the sails,
When up aloft the lookout sights a school of whales.

"Now clear away the boats, my boys, and after him we'll travel,
But if you get too near his fluke, he'll kick you to the devil!"

Now we have got him turned up, we tow him alongside;
We over with our blubber-hooks and rob him of his hide.

Now the boat-steerer overside the tackle overhauls,
the Skipper's in the main-chains, so loudy he does bawl!

Next comes the stowing down, my boys; 'twill take both night and day,
And you'll all have fifty cents apiece on the hundred and ninetieth
day.

Now we are bound into Tonbas, that blasted whaling port,
And if you run away, my boys, you surely will get caught.

Now we are bound into Tuckoona, full more in their power,
Where the skippers can buy the Consul up for half a barrel of flour!

But now that our old ship is full and we don't give a damn,
We'll bend on all our stu-nsails and sail for Yankee land.

When we get home, our ship made fast, and we get through our sailing,
A winding glass around we'll pass and damn this blubber whaling!

The Codfish Shanty

Glos' - ter girls they have no combs, Heave a- way, heave a- way!

They comb their hair with cod fish bones, We're bound for

South Aus- tra - lia. Heave a- way, my bul -ly bul -ly boys,

Heave a- way, heave a- way! Heave a- way, why

don't you make a noise? We're bound for South Aus -tra -lia.

Glos'ter boys they have no sleds, Heave away, heave away,
 They slide down hill on codfish heads.
 We are bound for South Australia.

Refrain: Heave away, my bully bully boys,
 Heave away, heave away!
 Heave away, why don't you make a noise?
 We're bound for South Australia.

Cape Cod men they have no sails,
 Heave away, heave away,
 They sail their boats with codfish tails.
 We're bound for South Australia.

(repeat Refrain)

Cape Cod wives they have no pins,
 Heave away, heave away,
 They pin their gowns with codfish fins,
 We're bound for South Australia.

(repeat Refrain)

Blow the Man Down

Oh, blow the man down, bul -lies, blow the man
 down! To me way - aye, blow the man down.
 Oh, blow the man down, bul -lies, blow him right down!
 Give me some time to blow the man down!

Chord markings: D, A⁷, G, A⁷, D

Come, all ye young fellows that follow the sea,
 With a yeo-ho! blow the man down!
 And please pay attention and listen to me,
 Give us some time to blow the man down!

On board the ship Thayer I first served my time,
 With a yeo-ho! blow the man down!
 And in the ship Thayer I wasted my time,
 Give us some time to blow the man down!

There were tinkers and tailors and sailors and all,
 with a yeo-ho! blow the man down!
 They shipped for good seamen on board the ship Thayer,
 Give us some time to blow the man down!

'Tis larboard and starboard, you jump to the call,
 With a yeo-ho! blow the man down!
 When kicking Jack Williams commands the ship Thayer,
 Give us some time to blow the man down!

Leave Her, Johnny

I thought I heard the Old Man say,
 Leave her, John - ny, leave her! You can go a - shore and
 draw your pay, It's time for us to leave her!

The winds were foul, the ship was slow,
 The grub was bad, the wages low,

The winds were foul, the trip was long,
 But before we go we'll sing this song,

It's growl you may, but go you must,
 It matters not whether you're last or fust,

I'm getting thin and growing sad,
 Since first I joined this wooden-clad.

The rats have gone, and we the crew,
 It's time, for sure, that we went too.

Oh, California

I came from Sa - lem Ci - ty, with my wash - bowl on my
 knee I'm go - ing to Cali - for - nia, the gold - dust for to
 see, It rained all day the night I left, the wea - ther it was
 dry; The sun so hot I froze to death, Oh bro - thers don't you
 cry. Oh, Cali - for - nia, That's the land for me! I'm
 bound for San Fran - cis - co, with my wash - bowl on my knee.

I jumped aboard the 'Liza ship and traveled on the sea,
 And everytime I thought of home, I wished it wasn't me!
 The vessel reared like any horse, that had of oats a wealth,
 I found it wouldn't throw me, so I thought I'd throw myself!

Oh, California, That's the land for me!
 I'm bound for San Francisco with my washbowl on my knee.

I soon shall be in Frisco, And there I'll look around,
 And when I see the Gold lumps there, I'll pick them off the ground.
 I'll scrape them off the mountains, boys, I'll drain the rivers dry,
 A pocketful of rocks bring home — So brothers, don't you cry!

Oh, California, That's the land for me!
 I'm bound for San Francisco with my washbowl on my knee.